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The Lloyd Roberts Lecture
ON
THE RENAISSANCE OF MIDWIFERY.*

BY
HERBERT R. SPENCER, M.D., B.S.LOND., F.R.C.P.,
OBSTETRIC PHYSICIAN TO UNIVERSITY COLLEGE HOSPITAL.

[DR. HERBERT SPENCER began by saying that the Medical Society was perhaps influenced in its choice of a lecturer this year by the facts that he enjoyed Lloyd Roberts's intimate friendship during the last twenty-five years of his life, that they were fellow workers in the same field of medicine, and that the same subjects, especially old books, interested them both. By way of commemorating the founder of these lectures, Dr. Herbert Spencer then gave some particulars of David Lloyd Roberts's personality, character, and habits from his own experience, and some particulars of the earliest books on midwifery in which he was especially interested and of which he bequeathed to the Royal College of Physicians such an unexampled collection. Those books, published in the vernacular, were widely used for study by midwives and might be said to have started the Renaissance of Midwifery. In collecting old books Dr. Lloyd Roberts employed the most celebrated of the old-book sellers, and, as he had more regard to the condition and rarity of the book than to the price, he was able to accumulate a very valuable library, especially of old medical books, which to the number of 1,800 (including 50 *incunabula*) he bequeathed to the Royal College of Physicians. This was said by the Harveian Librarian, Dr. Arnold Chaplin, to be the greatest gift of medical books to the College since the Marquis of Dorchester's in 1680. He loved Sir Thomas Browne above all writers, edited a charming edition of the *Religio Medici*, learned Italian in his old age that he might read Dante (on whose scientific work he wrote a book), and his collections showed that he was a lover of the good and beautiful in men, ideas, and things. After remarking that it was for his medical library that Lloyd Roberts would be longest remembered, and especially for his unequalled collection of early medical books, including *The Byrth of Mankynde* (1540), Dr. Herbert Spencer continued:]

It is the purpose of this lecture to give some particulars of the first books on midwifery in Germany, France, Italy, and England, which may be said to have started the renaissance of midwifery.

Obstetrics is an ancient art. It was outside the Garden of Eden that midwifery was born "of man's first disobedience," with the dread decree to woman "in sorrow thou shalt bring forth children." And we find the Garden of Eden incident referred to and depicted in some of the first books of midwifery.

The early history of midwifery is too extensive to be treated here; but it may be stated that the most distinguished of the ancient writers on obstetrics was Soranus of Ephesus, who lived in Rome at the beginning of the second century of the Christian Era under Trajan and Hadrian. He wrote *περί γυναικειων παθων*, which stands out as one of the most important works in the history of midwifery, which had at that time reached a high state of development.

Subsequently the art of midwifery made no advance at the hands of the Byzantines, and actually declined amongst the Arabians, who devoted more attention to the destructive operations on the child than to conservative treatment of the mother. One factor in preventing advance in the science of obstetrics amongst the Arabians was the prohibition of anatomical research in the Koran. But the chief reason why no advance was made was that the practice of midwifery was in the hands of midwives, as it had been since the earliest times. Up to the time of the Renaissance no midwife had written a work which developed the science or advanced the art or dignity of her calling.

Until the invention of printing the wisdom of the ancients was inscribed in manuscripts comparatively few in number, usually written in the classical languages, and therefore readable only by the learned. For the preservation of these works we are indebted in great part to the various religious bodies, and especially to the monks. The Church of Rome, which has at times opposed the pursuit of medical knowledge, has also been one of its greatest promoters. Many examples of this are given in Curatulo's *L'Arte di Juno Lucina in Roma*. And there are not a few instances of ecclesiastical dignitaries who have been practitioners of medicine. Pope John XXI, the only member of the profession to occupy the papal chair, was a doctor who taught medicine in Siena in the middle of the thirteenth century. As Petrus Hispanus he published his work *Thesaurus Pauperum*, which was printed for the first time in 1476: in the Lloyd Roberts Collection at the Royal College of Physicians are three copies of the work, including one of the 1494 edition. Nicholas de Fernham, an Englishman, was professor of medicine at Bologna, whence he returned to England in 1241 and became Bishop of Durham.

The renaissance of midwifery occurred somewhat later than that of other branches of learning. The intellectual world was in labour, in the throes of delivery from the domination of the Church, from the blind acceptance of the authority of the ancient writers, Aristotle and Galen, and from the restrictions of the classical languages. The Reformation had brought about the first stage; Paracelsus did something to bring about the second stage when he cast the works of Galen into a bonfire in the streets of Berne and anathematized his opponents with the words "sic vos ardebitis in Gehenna": and Eucharius Rösslin seized the opportunity afforded by the discovery of printing to publish his *Rosengarten* in German so that it could be understood by the people, and particularly by the midwives for whom it was written. Although Ortolff von Bayerland had published, about the year 1495, at Ulm, a German work showing "how women should conduct themselves before, during, and after childbirth," it did not contain much detailed account of obstetrics. To Rösslin is due the honour of the first printed work specially written for midwives.

RÖSSLIN'S "ROSENGARTEN."

Eucharius Rösslin (Röslin or Rhodion) was a physician at Worms and afterwards at Frankfort-on-the-Main. According to documents still existing at Freiburg in Breisgau, Rösslin was an apothecary there in 1493 and 1498. In 1504 a legal action was brought against him for "misshandlung," as the result of which a verdict was given against him and he was compelled to pay all costs and a fine of 3½ pounds of pfennigs. In 1506 he was elected physician to the city of Frankfort for a period of six years at a yearly stipend of 60 florins; in 1508 he entered the service of the Duchess of Brunswick and Lüneberg, to whom he dedicated his *Rosengarten*. Before the expiry of his term of office he left (in 1511) Frankfort and became city physician to the town of Worms, returning again to his Frankfort post at an increased salary of 70 florins. According to Baas he died in September, 1526.

V. Siebold in his *Geschichte der Geburtshülfe* (1845) makes a curious error in giving the date of his death as 1553 or 1554, confusing this Eucharius Rösslin with his son, who bore the same name and died in 1553 or 1554. The error is the more remarkable because, in the Latin translation of the *Rosengarten* entitled *De partu hominis*, there is a preface, dated 1532, written by Christian Egenolph and addressed to Eucharius Rhodion, which refers to the death of the father "cui bene sit in Domino, cujus in hac urbe tu et nomen refers et functionem." In this work Rösslin acknowledges his indebtedness to the ancient writers Hippocrates, Galen, Rhases, Averroes, Avicenna, and Albertus magnus; but the most important parts are taken from Soranus, probably from a manuscript by Moschion (or Mustio) which itself was copied from Soranus "word for word."

It is suggested by Gustav Klein that Rösslin used the *Codex Palatinus Latinus*, which was at that time in Heidelberg, not far from Freiburg, Worms, and Frankfort, where Rösslin lived. Some of these manuscripts, dating from the ninth to the fifteenth century, were illustrated, amongst the most interesting being the plates of the foetus *in utero*

* Abstract of the second Lloyd Roberts Lecture delivered under the conjoint scheme of the Royal College of Physicians, the Medical Society of London, and the Royal Society of Medicine, at the Medical Society of London on November 19th, 1924.

which, reproduced in the English translation, *The Byrth of Mankynde* (1540), were among the earliest copperplates published in this country. The figures have been often reproduced. One plate, not met with in the earliest manuscripts, shows twins grasping each other by the heel: this was probably drawn by a monk in reference to the birth of Jacob and Esau. Rösslin also published some admirable original plates—namely, the dedication plate depicting the author presenting his work to the Duchess of Brunswick and Lüneberg, a plate showing the midwife examining a parturient woman (Fig. 1), and a figure of the birth-chair.

It is stated by G. Klein that about a hundred editions of *Rosengarten* are known, three editions being published in 1513. He gives a reproduction of the title-page of the 1513 edition, printed by Gran at Hagenau, which shows a mother with her naked boy and a midwife holding a babe wrapped in swaddling clothes. The title-page of the 1524 edition is also given by G. Klein. It is a fine representation of the lying-in chamber, showing the midwife bathing the baby. The midwife sits with her bare legs in the tub, no doubt to make sure that the water was of a proper temperature—a useful practice adopted also by the Japanese midwives.

Under the title *De partu hominis* Rösslin's son published a Latin translation, of which, according to Klein, eleven or twelve editions appeared, the first in 1532. The title-page of my copy of the 1554 edition gives the representation of the lying-in chamber reversed from that in the *Rosengarten* 1524 edition, and some quaint woodcuts, depicting the feeding and rearing of the child.

The *Rosengarten* was translated into English by Jonas under the title *The Byrth of Mankynde*, and published for the first time in 1540. A second amended English translation was made by T. Raynalde, who used the Latin edition of E. Rhodion the younger. The late Dr. J. W. Ballantyne wrote a very full account of the English work, giving illustrations from many of the editions. He had not had an opportunity of inspecting the first edition, which is very rare; the only three copies he had been able to find in existence being in the libraries of Professor Klein of Munich and the British Museum. The Royal College of Physicians now possesses fifteen copies (eleven editions) of *The Byrth of Mankynde*, of which eleven copies, including two of the rare first edition, came from the Lloyd Roberts collection. The celebrated plates of the position of the foetus appear in this edition, and not "for the first time in the 1560 edition" as once stated by Dr. Ballantyne.

The *Rosengarten* contained little that was original; but it had the merit of being written in the vernacular, in which it could be read by midwives, in whose hands the practice of midwifery almost entirely lay; it was the first work dealing with obstetrics apart from medicine and surgery, and in its illustrations it gave for the first time printed figures of the birth-chair, the lying-in chamber, the position of the foetus *in utero*, and of the feeding and rearing of the child. Some of the plates are of high artistic merit and were copied by subsequent writers, including Rueff and Ambroise Paré.

Rosegarten
Das vierd Capitel sagt wie
sich ein yede fraw in vor vnd nach der gebur halten soll
vnd wie man ir in harter gebur zu hilff kommen soll.

Fig. 1.—From a copy of the 1513 edition in the Library of the Royal Society of Medicine.

Ambroise Paré's Obstetric Works.

The first of the obstetric treatises by Ambroise Paré, entitled "La maniere de extraire les enfans tant mors que vivans hors le ventre de la mere, lors que nature de soy ne peult venir a son effect," appeared at the end of the *Briesve collection anatomique*, published in 1551. The second treatise, "De la Generation de l'Homme recueilli des anciens et modernes," was published as an octavo volume in 1573 under the title *Deux livres de chirurgie*, and was reproduced in 1575 in the first edition of the complete works of Paré.

In his "Maniere de extraire les enfans" Paré revived the operation of podalic version, which had been entirely neglected for many centuries. The operation had been practised in the time of Celsus, Soranus, and Philumenos, but had found no place in the treatises of the Arabian physicians. Paré himself does not claim originality; but acknowledges that he had seen podalic version practised by Thierry de Hery and Nicole Lambert, "master barbers and surgeons in this town of Paris." He also advises that the abdomen should be moderately bound and pressed above the umbilicus, and the mother should be commanded to hold her breath at intervals by closing her nose and mouth, and that she should bear down as much as possible. Sternutatories may be given to aid in the expulsion of the child. He warns against pulling on the arms in presentation of the shoulder, for which he recommended, in certain neglected cases, amputation of the limb followed by podalic version.

Paré's reintroduction of podalic version after many centuries of neglect marks him as the master-writer of the obstetric renaissance. His work was plagiarized by Franco in 1561, and attempts have been made in modern times to deprive Paré of credit by quoting from certain editions of his work. His works passed through many editions, and it was his practice to make alterations when additions to his knowledge called for them.

The work on *The Generation of Man* contains the anatomical and other figures, including the birth-chair, copied from Rösslin and Rueff. Paré published a figure of lead caps for ulcerated nipples, which are still employed at the present day. I have in my library a work by T. Dunus (1565) with an autograph inscription by the author to Conrad Gesner, which recommends the application of wax cups or thimbles containing a few drops of pine resin to the nipples, to be worn during the last three months of pregnancy as a certain means of preventing cracks. To the criticism that some women or their husbands might object to the smell of the resin, Dunus replies that anyone who had suffered from the *magnum malum*, cracked nipples, would tolerate the smearing not only of the nipples but of the whole breasts with medicines however odoriferous. These are examples, of which there are many, showing that prematernity care is not a modern invention, but was practised by the Renaissance writers and also by Ortolff von Bayerland, who gives details of measures to be taken "vor der Geburt."

The movements of the child felt on palpation were first described by Paré. He published a number of figures of

instruments for the delivery of the dead child, and gave an illustration of the speculum matricis, an ancient instrument known to the Romans, also of instruments for the fumigation of the uterus. Of Caesarean section on the living he had seen disastrous results at the hands of Guillemeau, which caused him to write, "Je ne conseillerai jamais de faire tel œuvre ou il y a si grand peril sans nul espoir." It was in reply to this statement that his friend Rousset wrote the first work on Caesarean section *Hysterotomotokie* (1581).

The literature of the life and works of Paré is very extensive. As was the case with the founder of this lecture, there seems to be a doubt about the actual date of Paré's birth, the years 1509, 1510, 1514, 1516, 1517, 1528, having been given by various authors. Malgaigne states on the authority of Bégin that "A. Paré was actually born in 1517." He would thus be 73, and not 80, as usually stated, at the date of his death. On St. Bartholomew's Day, 1572, "it was not reasonable that he should be massacred." King Charles IX exclaimed after taking a shot with his arquebus at his less distinguished subjects: "il pouvait servir à tout un petit monde." This service Paré, the Reformer of Surgery, the Reformer of Midwifery, continued to render up to the time of his death in 1590—and "his soul is marching on."

Scipione Mercurio's "La Comare."

The first of the Italian writers for midwives was Scipione Mercurio, who published his work entitled *La Comare o Ricoglitrice* in 1596. Scipione Mercurio was born in Rome about the year 1540. He studied medicine at Bologna and Padua, but soon devoted himself to theological studies and entered the Dominican monastery at Milan, where he took the name of Hieronymus. He still continued to occupy himself with the study of medicine, and finding his monastic life did not afford him sufficient opportunities for the practice of medicine he quitted the monastery and travelled in France and Spain in the years 1571 and 1572 as physician to a German officer, Hieronymus de Ladrone. On completing this journey he returned to Italy and practised with great success in Padua and Milan. He had studied in Bologna under the celebrated Arantius, of whom he speaks in the highest terms as "the most learned anatomist of his time and my very kind preceptor." He mentions a case in which he saw Arantius, in the year 1578, deliver a living child by Caesarean section from a woman who had been killed in the ninth month of pregnancy. He states that Arantius had familiarized himself with the anatomical conditions of pregnancy by performing many dissections of gravid women. He had also seen Arantius demonstrate the hymen, the existence of which, except as a rarity, had been denied by Paré.

Scipione Mercurio states that in Toulouse he had seen two women who had been safely delivered by Caesarean section, which at that time (1571) was "as well known in France as bleeding for headache in Italy." He may be said to have introduced the operation of Caesarean section on the living woman into Italy, and published the first printed illustration of the operation.

Scipione Mercurio led a stormy and adventurous life; at one time travelling with a German officer, Ladrone, in France and Spain, at another pursuing his theological studies, then abandoning these for the practice of medicine, and again resuming them; finally settling in Venice, where he lived for fifteen years. He died about the year 1615 or 1616, according to Ghilini in Venice, according to Renazzi in Rome in the ancient Dominican convent of Santa Maria. His other writings show his great interest in medicine, and he seems to have specialized in the practice of obstetrics. He had little faith in medical writers who lacked practical experience. If they did not like his work, let them do him the great favour of not reading it. Perhaps the less it pleased his critics the more it would please others. He acknowledged that he had profited by the works of others—he gives a list of 80 authors whom he had consulted—and says he could never pardon Aristotle for adopting the statements of Hippocrates without once mentioning his name. Any errors in the work he prays the Lord will enable him to see and amend, and begs his critics not to censure that which is written for a good purpose. Mercurio's writings show that he was a man of wide erudition, which he was wont to bring to bear upon his critics in pointed shafts of wit and learning.

Fig. 2.—Title-page of the second and third editions. That of the first edition was published in the Journal of October 21st, 1921.

La Comare is the first work in which contraction of the pelvis is mentioned as an indication for Caesarean section. It contains a description and illustration of the "hanging-legs" position for delivery in cases of contracted pelvis, which Walcher published in 1889 as something new, and of the position in which very fat women should be placed for delivery—a position which Osiander says even practised acrobats could hardly maintain for more than a quarter of an hour. There is also a description of the operation of bimanual version which is usually associated with the name of Braxton Hicks. Mercurio advised that the diet of pregnant women should be reduced one-third during the last three months.

The work is divided into three books. The first book deals with natural labour and the care of the pregnant woman and of the newborn child by the midwife. The

second book deals with preternatural labour (that is, with the child's hands, feet, or side presenting), and shows how the midwife should deal with these "difficult and dangerous cases." The third book deals with the maladies which may occur to the lying-in woman and newborn child, and teaches the midwife how to treat these maladies in case the patients do not wish or are ashamed to call in a doctor.

Von Siebold, in his *Geschichte der Geburtshülfe* (1845), says *La Comare* was first published at the beginning of the seventeenth century—Haller gives the date of the first edition (which he had not seen) as 1604. Quetif and Eckard, the biographers of Mercurio, speak of an edition which appeared before 1600, but leave the matter doubtful.

The first edition actually was published in 1596, the second and third books being dated 1595. That *La Comare* is a *cinque cento* book was first made known by Davidson of Breslau in 1864. A few years ago I was fortunate enough to obtain a copy of this edition, which is very rare, only three other copies being known to exist. Fasbender says there were seventeen editions of the work, and Curatulo gives a short account of these seventeen editions. I possess two editions (1680 and 1686) not mentioned by Curatulo, and these, with the 1713 edition in the Lloyd Roberts collection of the Royal College of Physicians, bring the number of the editions of *La Comare* up to twenty.

The first edition, *La Comare o Ricoglitrice*, Venice, G. B. Cioti, 1596 (second and third book dated 1595), quarto, is very rare. There is a copy in the Marcian Library at Venice, another in the library of the Arcispedale in Florence, a third in the Alexandrine Library at Rome, and a fourth copy is in my possession. There are some good anatomical figures from copperplates by Franciscus Vallegius. The other figures are rough woodcuts. I have given a reproduction of the title-page and some other figures from this edition in the Harveian Oration (1921).[1]

The second edition, *La Commare o Riccoglitrice*, Venice, 1601, G. B. Ciotti, is also rare. The second book has no separate title-page. The third book is dated 1600. There is a remarkable title-page (Fig. 2) to this edition, which is dedicated to Octavian Malipiero, the stemma of whose family is given below, and above is a portrait of Catherino Maripiero, who fell while engaged in sinking the Turkish fleet at the battle of Lepanto (1571), in which Cervantes was wounded and lost the use of his left hand. At the sides of the title-page are figures of Scipio Africanus ("belli gloria") and Cato of Utica ("reipublicae splendor"). The artist is not named; but a comparison with his other work shows that the plate was engraved by Vallegius.

The third edition appeared in 1606 (title-page as in second edition, dated G. B. Ciotti, 1601). In his dedication (of the first book) to Octavian Malipiero the author signs himself Girolamo Mercurio Romano, "from the convent of S. Eustorgius at Milan, 30th October, 1604," and states that this is the third edition, "ristampata la terza volta" (reprinted for the third time), which really means *printed* for the third time, for he adds that he dedicates it to Malipiero with the same affection as he did the second impression ("la seconda impressione"). The second book has Ciotti's "Minerva" printer's plate and is dated 1606. The third book has similar title-page and date (1606) to the second. This edition is sometimes called the 1604 edition (for example, by Curatulo) and was thought by Haller to be the first edition. The title-page is that of the second edition, and, although the dedication is dated 1604, the dates on the title-pages of the second and third books show that it did not appear till 1606.

William Harvey's "De Generatione Animalium."

The renaissance of midwifery occurred later in England than in Germany, France, and Italy. It had made some progress as a result of the appearance of translations of the works of Rhodion and Paré; but no original book on the subject had been published until 1651, when Harvey published his *De Generatione Animalium* with the chapter "De Partu" which justifies Aveling's designation of Harvey as the Father of British Midwifery. I have elsewhere[2] given a detailed account of Harvey's contributions to embryology and midwifery, and have pointed out the teachers at Padua who had specially written on those subjects. Spach's third edition of the *Gynaecia*—a collection of ancient and recent writers on gynaecology—had appeared in 1597, and the first edition of *La Comare* had been published in 1596, four years before Harvey went to Padua to study. Scipione Mercurio had himself practised obstetrics at Padua, and it was probably the great attention devoted there to obstetrics and the appearance of *La Comare* (the second edition was being prepared when Harvey joined the university) which stimulated Harvey to emulate the Paduan obstetrician by writing his "De Partu," the first original English work on midwifery.

The *De Generatione Animalium* consists of seventy-two "exercitations," followed by chapters on "labour," "the membranes and humours of the uterus," and "the conception." The first (Latin) edition, printed in London, 1651, contains a striking title-page representing Jove sitting on a throne and opening an egg from which various animals are escaping: on the egg is printed "ex ovo omnia," a pregnant generalization which Harvey made as a result of his researches on generation. The legend is omitted from the egg in the first Amsterdam edition (Leers, 1651).

The first English edition appeared in 1653 with a portrait by Faithorne, which is often missing. It is one of the best of the engraved portraits of Harvey.[3]

Prefixed to the first English edition is a laudatory ode to "the incomparable Harvey" signed M. LL. M.D., which stands for Martin Llewellyn, M.D. The English edition is written in quaint and spirited language and was probably produced under the supervision and with the approval of Harvey, who lived for four years after its appearance.

The great and original merit of Harvey's work on generation lies in the careful and methodical observation and record of the embryo and foetus at all stages. Harvey did for development what the illustrious Paduan professor Morgagni subsequently did for disease in his *De sedibus et causis morborum* (1761). The chapter on labour ("De Partu") deals with the subject from a scientific and practical point of view. The scientific part consists in criticism of previous opinions on the anatomy and physiology of the foetus and on parturition based on his own observations. The practical part gives evidence of extensive personal experience in midwifery, and is in the main devoted to the recommendation of patient watchfulness and gentleness, imitating Nature, in ordinary cases and podalic version in different ones.

England was not only the last of the great countries to produce a writer on midwifery, but was equally tardy in the recognition and regulation of its practitioners. In 1616, the year in which Harvey was propounding his immortal discovery of the circulation of the blood, Peter Chamberlen II made a petition to King James that some order might be settled by the State for the instruction and civil government of midwives, but nearly three hundred years were to elapse before the desirable result was obtained in the Midwives Act (1902), through the persistent efforts of the Obstetrical Society of London. Harvey inveighs against the meddlesome officiousness of the midwives. Another distinguished obstetrician, his friend Percivall Willughby, writes more fully of their shortcomings and misdeeds, and testifies to the value of Harvey's teaching.

The first books of the obstetric renaissance in Germany, France, Italy, and England achieved their object of being widely read by midwives, as we learn from the history of Louise Bourgeois and Justine Siegemundin. The books introduced them to the wisdom of the ancient writers, and, in the cases of Paré and Mercurio, to methods of treatment which had been long neglected and forgotten. England was fortunate in having, as the Father of English Midwifery, Harvey, who introduced into that branch of medicine the wide view, the scientific spirit, and the conservative practice which have been its characteristics. It was Harvey's inculcation of patience and gentleness in imitation of Nature, adopted by Smellie and Hunter, which made such a strong impression on Boër, the founder of the great

[1] British Medical Journal, October 21st, 1921, p. 623.
[2] Loc. cit.
[3] The latest portrait is a "white-line" wood engraving of the Canterbury portrait by Horace Gerrard; the first pull from this plate is in the library of the Medical Society of London.

Viennese school of midwifery, who, after studying in France and England, adopted the British practice, "having learnt in France what Art, in England what Nature, could do."

The purely British operation of induction of premature labour for cases of contracted pelvis can be attributed to the same conservative spirit. And if we add the discovery of the foetal circulation by Harvey, of the forceps by Chamberlen, of chloroform by Simpson, and of the antiseptic system by Lister, we may claim for British medicine that, though it was last in producing a writer on obstetrics, it has not been least in conferring benefits on parturient women.

ENCEPHALITIS LETHARGICA.*

BY

E. FARQUHAR BUZZARD, M.D., F.R.C.P.,

PHYSICIAN, ST. THOMAS'S HOSPITAL.

WHEN I had the honour of addressing this society on the subject of lethargic or epidemic encephalitis in December, 1918, our interest was aroused by the recent outbreak in our midst of a disease which we regarded as a stray visitor, whose sojourn might not unreasonably be expected to be of short duration, and whose back we should not be sorry to see. Events have not justified this expectation, as our guest is still outstaying his welcome and shows as little inclination to take his departure as we can show of ability to expedite it.

At the end of six years his role has changed from that of a casual, unwelcome visitor to that of a resident pest providing a serious menace to the health of the community. It is not to be wondered at that a disease which has so insidiously and so successfully established itself should present many points of interest for discussion. It is somewhat humiliating to our professional pride that we have not only so far failed to check its progress, but that we are still without the knowledge necessary to achieve that object. Before 1918 the term "encephalitis" was reserved almost entirely for an acute specific inflammation of the brain to which children or young adolescents were liable and of which the cause was the virus of poliomyelitis. To-day the young and old of both sexes are exposed to the danger of contracting another inflammatory disease of the brain, sometimes acute, at other times subacute or chronic, prolific in its clinical manifestations, disabling if not fatal in its results, difficult to diagnose, and almost defiant to treatment and prognosis. It is true that its microbic origin seems to be fairly determined, that its morbid anatomy has been studied in great detail, and that its clinical features have formed the theme of innumerable papers and monographs, but of its path of approach, of its methods of dissemination, and of any weapon with which to stay its hand our ignorance is still profound.

Remembering, as we must, that the secrets of medicine are rarely divulged without the laborious study from all available standpoints of every feature of a disease which presents itself, there is no need to be discouraged. The more profound and the more detailed our knowledge of a disease in all its aspects, the more likely are we to solve the mystery of its origin and the problem of its prevention.

In opening this discussion to-night I shall make no attempt to deal with all the problems presented by epidemic encephalitis which are of interest and which deserve consideration both from clinical and pathological points of view. I shall content myself with directing attention to one or two questions which are difficult to answer and which have important practical bearings, confident that those who follow me will more than make up for my omissions.

So much has already been written in regard to the clinical manifestations of encephalitis in the acute stage that it is hardly necessary to point out that the disease has no real characteristics in the way of symptoms or physical signs by which it can be recognized. Since any function of the brain may be disturbed, it is obvious that a whole multitude of different symptoms and physical signs may be presented. The diagnosis depends on a careful consideration of the history of onset, the course of events, and on the exclusion of other morbid processes which are capable of producing similar disturbances of function. We are not in possession of any serum or other chemical test by which the disease can be detected, and although examination of the cerebro-spinal fluid is often helpful in a negative way by eliminating other diseases, it cannot be said to afford us a cytological or chemical picture which is entirely pathognomonic.

Although there are so many difficulties in the diagnosis of the acute disease, they do not present nearly so serious a problem as that involved in the detection of what may be called the ambulatory form of encephalitis. And yet the importance of this ambulatory form in regard to its subsequent developments is becoming more and more impressed on our minds as time passes by. We are constantly being confronted now with serious disorders of the central nervous system in patients whose history alone offers a clue to the origin of their troubles, and in this way we are gaining some insight into the clinical features which characterize the ambulatory form of the disease.

I could cite a number of examples in which serious and disabling disturbances of the nervous system have followed what appeared to be a very minor illness, which has been regarded as influenza or even as an ordinary catarrh.

In July of this year I was consulted by a man, 37 years of age, who in the latter part of 1919 suffered from a short illness characterized by slight fever, headache, and general pains insufficient to prevent him from carrying on his duties in the army. In 1920 he pursued his ordinary life, but complained that he was drowsy all day and restless at night, and about that time began to suffer from attacks of dyspnoea, which were of frequent occurrence during the next two years. In August, 1922, he first noticed some tremor of the right arm and a slight generalized rigidity which he described as preventing him from ever sitting at rest in comfort. These symptoms slowly increased, writing and shaving became difficult, and he occasionally suffered from headaches of mild severity. When I saw him in 1924 he was still working, but suffered from a frequent desire to lie down and sleep and found the performance of his duties involved a great effort. On examination he presented all the characteristic features of the post-encephalitic Parkinsonian syndrome.

A somewhat similar case is that of a man of 53 who, in December, 1922, suffered from what was regarded as a bad cold which kept him away from work for a fortnight. During that time he noticed that he was slow and shaky in his movements and inclined to bend forward in walking. He returned to work at the end of fourteen days feeling queer but able to carry on for about three months, when he developed attacks of great loss of confidence out of doors with a tendency to fall backwards. He rapidly became slower and more clumsy in his movements, was hardly able to dress himself, and failed to do himself justice in his work. When I saw him in October, 1923, he presented the appearance of a patient suffering from paralysis agitans as well as other disorders of cerebral function, including a slight degree of sensory aphasia and impairment of his capacity to recognize objects placed in his right hand with his eyes closed. There was considerable exaggeration of all his tendon-jerks and his plantar responses were extensor in type.

In considering the history of these two patients it is difficult to see on what grounds a diagnosis of a serious disease of the central nervous system could have been made at the time when they were first taken ill. They may perhaps be regarded as somewhat exceptional, because in the majority of cases of ambulatory encephalitis it is possible to obtain a history of some symptom pointing very definitely to organic disease of the nervous system, by far the most common being a transient diplopia which not infrequently is present only during a few hours or a few days.

There are other symptoms which might well arouse a suspicion of encephalitis in patients suffering apparently from some minor ailment. I may refer to the occurrence of an acute pain affecting a limb, or perhaps the face or neck, generally labelled as a neuralgia or a neuritis, often of great severity, but generally lasting a matter of twenty-four hours or at the most two or three days. I have frequently observed such attacks of acute pain in cases of severe encephalitis in which the diagnosis has not been in doubt, but they also occur sufficiently often in the ambulatory form of the disease to be worthy of note in relation to diagnosis.

* A paper read in opening a discussion at the Medical Society of London on November 10th.

A lad of 20 in the early part of this summer suffered from severe pain in his left arm and leg which lasted for twenty-four hours and was associated with some slight malaise sufficient to keep him away from his employment for three days. On returning to work at the end of that period he found himself inclined to sleep in the train while going to his job and was very sleepy while at work. This drowsiness continued, and at the end of a fortnight he was troubled by diplopia for a period of forty-eight hours. During this time his relatives noticed that he was completely altered in temperament, having become depressed and morose and quite unlike himself. He was inclined to be restless at night and to sleep in the afternoon. When I saw him, at the end of ten weeks, he presented no definite physical signs of organic disease, but he was still quite unfit for any serious mental or physical exertion, being very easily tired and still much depressed. I saw him again about three months later, when he still complained of insomnia at night and inability to walk more than a mile without fatigue. Examination on this occasion revealed the presence of some lack of expression on the left side of the face, which gave rise in my mind to a strong suspicion that he was developing a Parkinsonian syndrome.

While on the subject of the more obscure and slight forms of encephalitis attention should be directed to the great difficulty which may sometimes present itself in making a diagnosis between encephalitis and early disseminated sclerosis. I cannot indicate this difficulty better than by recording an experience which I had in March, 1921, when there was a severe epidemic of encephalitis in London.

I was asked to see a lady, aged 40, who gave me a history that about a month before I saw her she had noticed diplopia, followed ten days later by a feeling of numbness over the left side of the face and by a suspicion of difficulty in articulation. She thought that her memory had not been quite so good as usual, and she had suffered on several occasions from nocturnal enuresis. For a few days she had been feeling rather unsteady on her legs. On examination there was very slight right-sided ptosis with some nystagmus on deviation of the eyes to the right side only. Sensibility over the skin area supplied by her left fifth nerve was impaired, and she complained that she had lost her sense of taste. There was very slight unsteadiness and awkwardness of her hands when her eyes were shut, but she complained of no difficulty in ordinary manipulations. The right abdominal reflex was less brisk than the left. The right knee-jerk was somewhat more brisk than the left and the right plantar response not so frankly flexor as that obtained in the other foot.

It appeared to me that the clinical features presented by this patient could be attributed equally well to encephalitis or to disseminated sclerosis, but in view of the prevailing epidemic I inclined somewhat to the former diagnosis. I saw her again in July, 1921, when she expressed herself as being perfectly well, and my examination then revealed no disorder of the nervous system. The ptosis, nystagmus, and awkwardness of the hands had completely disappeared and her reflexes were perfectly normal. This patient remained quite well until the summer of 1923, when she suddenly became unsteady on her legs, developed marked dysarthria, with dimness of vision in her left eye. She then presented nystagmus in both directions, pallor of the left optic disc, weakness of the left side of the face, and tremor of the right hand. Her tendon-jerks were increased, the abdominal reflexes had disappeared, and the left plantar response was distinctly abnormal.

I have no doubt that this patient is suffering from disseminated sclerosis, and the rapid improvement which took place in regard to these later symptoms was only in conformity with what one expects in that disease.

I do not propose to take up your time with a description of the sequelae which have been so often observed after acute attacks of encephalitis, as these have been the subject already of many discussions and many papers, but there are one or two points in connexion with these late developments which deserve further consideration. They have a most important bearing on the question of prognosis, and any information which can help to make prognosis easier is worthy of note.

In the present state of our knowledge only a very courageous or very ignorant doctor would willingly assume the role of a prophet when faced with a case of acute encephalitis lethargica in the first week or two of the disease. In such a position one is only justified in pointing out the various possibilities which the future holds for the patient, and these possibilities, which are numerous, may be briefly summarized in the following way:

1. The patient may recover within a reasonable time and suffer from no subsequent ill effects.

2. The patient may die in the acute stage of the disease.

3. The patient may live, but remain permanently more or less disabled as the result of the disease.

4. The patient may make an apparent recovery and yet relapse after a period which may vary from a few weeks to a few months, or perhaps even longer.

5. The patient may make a more or less complete recovery, and yet after a variable interval develop one of the slowly progressive sequelae which are now well recognized as legacies of lethargic encephalitis.

The position of the prophet is, therefore, obviously not an enviable one, and any attempt to make his task easier can at present be based only on insufficient and unreliable data. Some comments are, however, perhaps justifiable in this connexion. The more acute the onset and the more fulminant the outbreak of symptoms, especially when associated with high temperatures, the more serious is the outlook in regard to a speedy fatal termination. Unfortunately it cannot be said that the milder initial stages are in any way exempt from the possibility of being followed by serious and permanent disablements of a progressive character, nor from the possibility of a complete recovery being followed by a more severe and possibly fatal relapse after a few weeks or months. On the other hand, there is no doubt that many mild cases make good recoveries without further developments. The difficulty of prognosis depends on the fact that we are without criteria which would enable us to pick out the more hopeful cases. I cannot help thinking that a much longer experience of this disease is still necessary before we can arrive at reliable statistics in regard both to mortality and to permanent disability. Personally I should be very sorry to attempt to reckon the probabilities in regard to the results of the disease in any kind of figures or percentages.

One of the many interesting points worthy of discussion to-night is the question as to how far late developments can be regarded as true relapses, as merely indirect consequences of a morbid process which has ceased to be active, or, in rare cases, as examples of fresh infection. I have in mind patients who appear to be examples of these three occurrences. For instance, I recall a man about 50 years of age who, after a few days of ill health, suddenly passed into a state of unconsciousness, rapidly followed by a delirium which lasted for about seventy-two hours, and, recovering from this, he suffered for another week or two from severe headache, diplopia, and a certain amount of mental confusion. A gradual convalescence set in which was rudely broken at the end of about three months by the onset of severe headache, hemianopia, and other active cerebral symptoms, which proved fatal in the course of about three weeks. On the other hand, I have in mind the case of a lady whose initial illness in the winter of 1918-19 was characterized by slight pyrexia, diplopia, lethargy, and myoclonic movements, but who made, apparently, a complete recovery and remained in her normal condition for a period of five years. At the end of that time she was again seized with diplopia, pyrexia, headache, and rapidly increasing clouding of consciousness, and died after an illness which only lasted three or four days. The particular interest in this case lies in the fact that a thorough *post-mortem* examination was made, and that the evidence of old as well as recent inflammation was detected in the course of the microscopical examination of the brain tissues. Attempts, however, made by Dr. Greenfield to inoculate animals with the virus from this patient proved entirely unsuccessful. We are left, therefore, quite unable to decide whether the fatal attack should be regarded as a long-delayed flare-up of the initial inflammatory process or whether it was the result of an entirely fresh infection in a patient whose acquired immunity, if there be such a condition in relation to this disease, had faded out. It may be noted incidentally that the second attack occurred at a time when cases of encephalitis were extremely prevalent.

While discussing the question of prognosis it may not be out of place to refer briefly to a question which is not infrequently put to us in regard to the duration of particular symptoms, and I should like to refer especially to the prospects of a patient who, after all other symptoms of the disease have disappeared, still suffers from myoclonic contractions. In this connexion it is worthy of record that a medical man, who suffered from an acute attack of

encephalitis in 1916, was still suffering from frequent bouts of myoclonic contractions in his trunk muscles when I examined him in 1920. When I last saw him, a year ago, the movements had nearly ceased, and only reappeared from time to time when he was overtired.* He was then, and still is, leading a very strenuous life in general practice and is in no way disabled. I was consulted in regard to his qualification for a life insurance policy, and expressed the opinion, which was accepted by the office, that he might be taken on at ordinary rates. This opinion was expressed as the result of my experience that the persistence of myoclonic contractions should not be regarded as an unfavourable symptom from the prognostic point of view. I might even go further, and say that even in acute cases the presence of severe and widespread involuntary muscular contractions is not necessarily of grave omen.

The sequelae of encephalitis are worthy of close study from an academic point of view on account of the light which they may help to throw on the localization of cerebral functions. I do not propose to make any comments on the striking changes in temperament and behaviour which are well known to follow in the train of this disease, but I should like to draw your attention to some interesting phenomena which not infrequently are associated with the post-encephalitic Parkinsonian syndrome. Only a few weeks ago I had the opportunity of discussing with an intelligent patient, suffering from that condition, the alterations which had taken place in what one might call her everyday experiences. She complained that in addition to her general slowness of action she was still inclined to drowsiness and to attacks of uncontrollable yawning. While she could detect no impairment of memory, nor of her ability to grasp subjects in which she was interested, she was much handicapped in her daily activities by attacks of what she called "shortness of breath," which on further analysis she described as periods during which she had to breathe consciously. She remarked that the same attention was necessary for deglutition, and that she could only *sip* her tea because each mouthful had to be swallowed by a conscious effort, the actual process causing her some annoyance because of its noisiness. She presented, what is so common in these patients, considerable impairment of the power to converge and accommodate, which prevented her from reading for any length of time. In regard to her rigidity she explained that she could relax her muscles voluntarily, but as soon as she stopped thinking about it the muscles became screwed up again. The reason why she liked to have massage was that she got tired of the feeling of muscular tension, and that rubbing relieved it and served to some extent to prevent attacks of cramp. She also described a curious habit which beset her when she was standing in the erect position. Her weight was constantly being transferred alternately from one foot to the other unless she directed her attention to it. So long as her attention remained fixed on the idea of standing still she was able to do so, but the moment her mind was distracted the movement of transferring her weight from one foot to another returned.

The cases presenting the Parkinsonian syndrome appear to illustrate a pathological condition in which many functions purely automatic in normal health can no longer be aroused to activity except under the influence of the higher centres, and it is not surprising that patients suffering in this way find that the burdens and duties of life have been materially increased by their illness.

We are accustomed to associate this Parkinsonian syndrome with lesions of the basal ganglia, and it has possibly struck some of us as being rather curious that with few exceptions the progressive sequelae of encephalitis take this form. Is it possible that there are other progressive sequelae of the disease occurring less commonly and perhaps not yet recognized? During the last three or four years I have been faced by a number of cases of progressive hemiplegia, generally starting with a disability of one limb, which spreads first of all to the other limb and face on the same side and then appears in the limbs of the opposite side, finally producing the picture of a double hemiplegia. In these cases the disability is mainly a motor one, but is not infrequently accompanied by slight sensory disturbances of cortical origin. This condition has appeared in patients with no arterial changes, and therefore could not be ascribed to a progressive defect in cerebral circulation. The process has been unassociated with headache, vomiting, or optic neuritis, but the absence of any signs of increased intracranial pressure has not deterred me in one or two instances from advising an exploratory operation of the brain. When this has been done no gross changes have been visible, and I am beginning to suspect that the progressive disability may be the legacy of unrecognized encephalitis and characterizes a group of patients comparable to those presenting the Parkinsonian picture. In the latter case the chief incidence of the disease is on the basal ganglia, and in the former a similar process may be operative on the cerebral cortex. In a few of these cases I have noted the occurrence of an illness, regarded as influenza, preceding the onset of the symptoms referable to the central nervous system, but I have not sufficient evidence at the present time to do more than suggest the explanation I have indicated as a possible solution of the problem they present.

It may be that the advent of encephalitis in an epidemic form—and it is difficult to believe that it is a disease entirely new to us—may in the long run throw light on the etiology and pathogenesis of some obscure disorders of the brain notable for psychological and physical disabilities. At any rate, there is no need to apologize for having devoted much of your time and mine this evening to a study of the dire results which are apt to follow comparatively trivial disturbances of the nervous system. The practical lesson to be learnt from our experience of the last few years is that no minor ailment involving definite evidence of organic nervous lesions, however slight, should be treated with anything but the greatest consideration. It cannot be stated as a proved fact that with more rest and care in the early stages of mild encephalitis late serious developments may be prevented, but on general principles such an expectation is certainly permissible. Inactivity is an essential part of the treatment which we employ for inflammation in any part of the body; no exception to this rule can be justified in the case of our most highly specialized, most delicate, and yet most valuable tissues.

ANEURYSM OF A BRANCH OF THE RENAL ARTERY: RUPTURE: NEPHRECTOMY: RECOVERY.

BY

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SPONTANEOUS aneurysm of a branch of the renal artery as a source of symptomless haematuria is so exceedingly rare that the following case seems to be worth recording.

A married lady, aged 47, was brought to me by Dr. Bowen-Jones of Carmarthen in December, 1918. She had been suffering from very severe haematuria for three weeks and was getting rapidly worse in every way. There was no history of recent injury or illness. The bleeding had begun suddenly. It was so profuse and continuous that it was thought at first to come from the uterus; later it became intermittent and clearly came from the bladder during micturition. There was no history of renal pain or colic, nor was there any palpable enlargement or tenderness of either kidney. A complete *x*-ray examination failed to reveal any urinary calculus. Cystoscopy was difficult owing to the large amount of blood clot in the bladder, but ultimately it was proved that the blood came in large quantities from the left ureter and that normal urine issued from the right.

As the patient was very ill and bloodless the left kidney was explored without delay through the usual oblique incision in the loin. It was found to be enlarged, adherent, and deeply congested; its pelvis was greatly distended with blood. No stone could be felt in the latter nor in the kidney. The pelvis was incised, but bright red blood rushed out, and a finger introduced failed to find any stone or other cause for the furious bleeding, therefore nephrectomy was performed at once. The patient made a good recovery, but she took a long time to recover from her severe anaemia. She has remained in good health and is well nearly six years later.

Upon opening the kidney and its pelvis from end to end black streaks of altered blood and an infarct were seen in the renal substance, and a ruptured sacculated aneurysm, the size of a

large pea, was found partly on the surface of one of the lower renal papillae. It arose from one of the intrarenal branches of the renal artery. It is unfortunate that, owing to the pressure of military surgery, the specimen was not preserved.

Aneurysm of the renal artery is very rare. M. J. Conroy[1] estimated from *post-mortem* records that only about 1 per cent. of all aneurysms affect this artery. Sir Henry Morris,[2] in 1900, was able to collect the records of only 21 cases, and two-thirds of these were traumatic in origin; Conroy, in 1923, succeeded in adding 11 cases, but he overlooked 3 cases published by David Newman[3]—making 35 in all. Two of Newman's cases were very like the one recorded here, for they were spontaneous in origin, saccular, and situated within the kidney or its pelvis. One of these arose in the renal artery itself, and the other, like mine, originated in one of the large branches of this artery. It is clear that this type is not easily recognized even when the kidney has been exposed in order to find and stop a painless haematuria which threatens life. It is probable that small aneurysms affecting the branches of the renal artery have been overlooked even after the kidney has been removed, either during life or after death. It would have been easy to miss the small aneurysm which caused so much mischief in my patient.

Apart from haemorrhage, these intrarenal aneurysms cause no symptoms or signs and are only found after death from some other disease.

Ætiology.

We are not concerned here with traumatic aneurysms of the renal arteries, which are due to contusions, lacerations, rupture, wounds, or operations upon the kidney. The cause of *spontaneous aneurysms* is the same here as elsewhere. Atheroma, syphilis, embolism, or infection appear to have been the causes in the few recorded cases; in my case there was no evidence of any of these. The average age of the seventeen known cases of spontaneous aneurysm was over 40. A little more than half of them arose from *branches* of the renal artery.

Symptoms and Signs.

Spontaneous aneurysms are usually small in size, remain intact, and give no clinical signs, but when they rupture into the pelvis "symptomless haematuria," which is generally very profuse and either intermittent or remittent, occurs. This is in striking contrast to traumatic renal aneurysms, the majority of which cause large tumours in the loin and much pain with or without haematuria.

Diagnosis.

The diagnosis of spontaneous renal aneurysm depends chiefly on the great severity and recurrence of the painless haematuria, the absence of any history of injury, and the absence of the shadow of a renal calculus. It is interesting that in several cases (including my own) the bleeding was so severe that it ran continuously out of the urethra, so that its source was at first thought to be uterine. Several cases have needed a catheter because clots blocked the urethra. Cystoscopy, after washing out the bladder, proves the absence of vesical growth, and the issue of blood from one ureter indicates that the source is in the corresponding kidney. Newman, in two cases, noticed what he regards as a diagnostic sign—that is, "when interrupted pressure was made with the kidney between the hands—one behind and another in front—every time pressure was made a quantity of blood was seen to flow into the bladder, and when the pressure was withdrawn the flow ceased. This is found in no other condition." This sign, in his opinion, should distinguish renal aneurysm from all other causes of severe haematuria.

In my case the blood escaped continuously and with great force during the cystoscopic examination. I have not noticed such forcible and profuse bleeding even with renal neoplasm, which, by the way, often forms a palpable renal tumour—which spontaneous aneurysm rarely does.

Treatment.

Without operation the prognosis of bleeding renal aneurysm, either traumatic or spontaneous, is very grave. An early operation offers the only reasonable chance of recovery. Hitherto nephrectomy has been adopted in all but one of the successful cases. Orth,[4] operating for traumatic aneurysm, turned out the clots and successfully sutured the tear in the renal artery, but as a rule the condition of the kidney in these traumatic cases is so bad that nephrectomy is necessary. Before removing the kidney it is necessary to prove the presence and activity of the opposite one.

So far the diagnosis of spontaneous aneurysms in the kidney has been so uncertain and incomplete that in the few recorded cases nephrectomy has always been adopted, and on the whole very successfully. With the aid of a pedicle clamp after delivering the kidney, incising the pelvis should enable us to make an accurate diagnosis of an aneurysm in a branch of the renal artery, and to remove the aneurysm, which is usually quite small, without any loss of blood. It would be a great advance to save the kidney in this way, but it is probable that in some cases the aneurysm may not be discovered, and possible that, in a few, another small aneurysm may be present in the kidney or subsequently develop in diseased arteries to give recurrence of bleeding.

Whatever operation is performed, these patients are usually so ill and anaemic that blood transfusion must be done in order to give them the best chance of recovery.

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A PLEA FOR THE EARLIER OPERATIVE TREATMENT OF ACUTE OTITIS MEDIA.

BY

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There is, in my opinion, no branch of surgery more neglected than the treatment of acute otitis media. Almost every day one meets with cases where an acute inflammatory condition of the middle ear has been allowed to progress until a state of chronic suppuration, with all its attendant sequelae, has resulted. Probably many factors contribute to this unfortunate result, but chief amongst them are, first, the ignorance of the general public; secondly, the lack, until quite recently, of compulsory training with examination of the medical student in the diseases of the ear; and lastly, the fact that, except in a few cases, a visiting otologist is not recognized as a necessary member of the staff of a large fever hospital.

The exanthemata are responsible for the majority of the worse types of suppurative middle-ear disease, and it is at their inception that so much can be done to prevent a progressive and chronic disease. It is to be hoped, therefore, that in the near future local authorities will see the wisdom of following the example set forth by a few of our large fever hospitals in appointing visiting otologists.

Given a case of acute otitis media, how should it be treated? All are agreed upon the value of an early incision of the tympanic membrane, and yet I wonder how often it is advised, judging from the large number of "running ears" where no such treatment was adopted. The ear is syringed, hot applications applied, and the appearance of pus in the meatus anxiously awaited. It is too frequently thought that when pus appears all is well, but Nature's perforation of the tympanic membrane is in practically every case a tension rupture—that is to say, the increased intratympanic pressure, from the accumulation of inflammatory products, is ultimately relieved by a bursting of the membrane.

The tympanic membrane is capable of withstanding a high degree of pressure, and in many cases, before the membrane ruptures, the increased intratympanic pressure has disseminated the infection into the posterior end of the middle-ear cleft—the mastoid antrum. Moreover, the perforation is small, usually on the summit of what was a bulging part of the membrane, and

therefore frequently most disadvantageously placed for the efficient drainage of the tympanum. By early paracentesis efficient drainage can be established, the risk of spread of infection to the mastoid antrum materially lessened, and, in the vast majority of cases, pain immediately relieved. It is an operation devoid of risks in the hands of those accustomed to aural surgery, can be performed under short anaesthesia, and gives excellent results both as regards preservation of hearing and resolution of infection.

In the majority of cases so treated there is rapid cessation of the discharge, which often is only serous, and the middle ear is generally dry at the end of ten to fourteen days, if not earlier. In a few cases, however, this excellent result is not obtained, and in spite of timely paracentesis the ear continues to discharge profusely. Two factors contribute to this result—namely, the extreme virulence of the infection, particularly the type of organism, and the presence of some meatal obstruction hindering drainage. Infections due to the streptococcus or influenza bacillus are very prone to spread to the mastoid antrum. Further, in some cases, perhaps by reason of the virulency of the infection, there is marked inflammatory swelling of the external auditory meatus. This, if occurring in a meatus congenitally narrow, considerably hinders efficient drainage of the middle ear.

It is commonly believed that the only necessity for any operative treatment is when pain, tenderness on pressure, or swelling behind the ear develops. The development of such signs and symptoms may almost be regarded as a godsend, for then the case is efficiently treated and convalescence with cessation of discharge assured.

The anatomical structure of the mastoid process decides whether pain, tenderness, etc., appear early or not. They are evidences that the inflammation has spread so far as to involve the mastoid periosteum. In the cellular type of mastoid process they frequently become manifest early, but in the acellular dense or sclerotic type they may be considerably delayed if they ever develop.

There are, however, other earlier signs of involvement of the mastoid antrum—namely, bulging and redness of the postero-superior part of the tympanic membrane and the adjacent portion of the posterior wall of the external auditory canal. To appreciate this sign, however, requires some special training. I would therefore urge that the persistence of suppuration after ten to fourteen days, in spite of early paracentesis, especially if associated with some inflammatory stenosis of the meatus, is, even in the absence of pain, tenderness, or swelling, an indication that something more than local medication is required and that the mastoid antrum should be opened, disinfected, and drained.

If such a procedure be not adopted the case may pursue one of two courses: either the condition gradually progresses until the mastoid antrum and process is involved, demanding immediate operation, or there is gradual resolution of the discharge during several weeks, until finally the patient declares that the ear is dry and he is quite well. In some such cases we find that the perforation has healed and the membrane is intact, but permanent damage may have been wrought. The membrane is frequently scarred, opaque, thickened, indrawn, and adherent to the inner wall of the tympanum, permanently impairing audition, if not also producing other distressing symptoms, such as tinnitus and vertigo. In other cases, though the membrane may appear to be normal in texture and position, the hearing is defective, owing to adhesions around the ossicular chain or thickening with fibrosis of the muco-periosteum around the labyrinthine windows. These changes are the result of long-continued inflammation causing excessive cellular exudation into the muco-periosteum, with ultimate fibrosis and sclerosis, and are permanent, no treatment being of any avail. This class of case swells the out-patient clinic and is distressing to see, particularly in view of the fact that so little can now be done, whereas so much was possible at an earlier date.

Lastly, it may be discovered that the perforation has not healed, is still moist, although the patient on interrogation is quite convinced of the absence of any discharge. This class of case often has remarkably good hearing, but he is the patient who frequently first seeks advice, because of the sudden onset of some intracranial complication.

If we wait until there are external evidences that the mastoid process is involved before resorting to operative treatment—a delay which may extend over a few weeks—then the pathological changes above described ultimately ensue, with some permanent impaired audition.

Early Drainage of the Mastoid Antrum.

By early drainage of the mastoid antrum I do not mean the so-called radical mastoid operation, in which the tympanum, aditus, and antrum are thrown into one cavity, but the simple operation of exposing the mastoid antrum, curettage of its walls, disinfection of the interior with bipp, and primary suture of the incision.

In 1921 I reported jointly with Mr. Gilhespy[1] the results of a series of cases so treated. The average duration of stay in hospital after operation was twelve days. At the end of this period there was no otorrhoea, except in one case which was an acute exacerbation of a chronic suppuration necessitating a radical mastoid operation. These cases, examined one year or more after treatment, showed an intact membrane with normal hearing. Such results as these are shared by many, and only go to prove the good results obtained by early operative treatment.

I have frequently resorted to early exploration of the mastoid antrum in cases of persistent discharge with no gross lesion of the mastoid, and have had no reason to regret it. It is an operation almost devoid of risk and followed by speedy healing and convalescence since the introduction of bipp; it gives gratifying results both as regards cessation of discharge and preservation of hearing.

There is, in my opinion, no greater field for the fulfilment of the principles of preventive medicine than in the treatment of acute otitis media—once deafness is established no known treatment is of any avail.

REFERENCE.

[1] *Journal of Laryngology and Otology*, October, 1921.

British Medical Association.

PROCEEDINGS OF SECTIONS AT THE ANNUAL MEETING, BRADFORD, 1924.

SECTION OF PATHOLOGY AND BACTERIOLOGY.

Professor C. H. BROWNING, M.D., President.

MULE-SPINNERS' CANCER AND MINERAL OILS.

BY

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No less than 20 per cent. of the fatal cases of cancer of the scrotum in this country occur amongst cotton-spinners.

By courtesy of the Registrar-General for England and Wales we have had access to unpublished records which disclose the fact that during the two years 1913-14 90 men died from scrotal cancer, and of these, 18 (or 20 per cent.) were cotton-spinners; in the years 1921-22 the total number was 107, of whom 26 (or 24 per cent.) were spinners; and in 1923 there were 15 fatal cases in this industrial class. This gives an average of 11.8 per annum. No other group of occupations, with the exception of chimney-sweeps, showed more than three cases. Cancer of the scrotum is not a very common disease: it is much less common in the general population than cancer of the penis, for example. During the first two periods mentioned there were 254 and 284 cases respectively of penile cancer, but not one occurred in cotton-spinners.

Here, then, we have something of practical importance, industrially and medically, that calls for explanation and investigation—a particular form of cancer occurring in a certain industry—and yet, strange to say, no one until within the last two years seemed to have known or to have suspected this association. The credit for this important discovery must be given to Southam and Wilson.[1] If our

mortality statistics, which are probably the best in the world, had been arranged so as to show localizations of cancers in relation to occupations, the liability of cotton-spinners to develop epithelioma of the scrotum would have been appreciated many years ago.

According to the 1921 census, 57,069 persons were engaged in cotton-spinning processes, including piecers and mule-, ring-, and flyer-spinners. As the piecers are almost without exception boys or very young men, and as female labour is employed exclusively in ring and flyer spinning, there remain only the mule-spinners to consider. Of these there are at the present time 23,000, all adult males. (It is believed that a few women, perhaps not more than a score or two, act as mule-spinners.) Thus, taking a yearly average of 11.8 cases, we find that approximately 1 in 2,000 mule-spinners die each year from cancer of the scrotum. This is startling enough, but if we assume that the carcinogenic agent implicated produces its effect only after many years of exposure to it, the elderly workers must have a greater liability still. What are the factors responsible for this affection?

Southam and Wilson, in examining the records of cases of cancer of the scrotum admitted to the Manchester Royal Infirmary for a period of twenty years, noticed that, out of a total of 141, 69 were mule-spinners, and they were led to investigate the conditions under which the spinners work. At present there is a lawsuit about the matter* and there is a conflict of opinion on certain points, which will be mentioned later, but the main facts are clear. Each spinner attends to a pair of machines, called mules, a portion of which—the carriage—advances and retires bearing on it the spindles on which the spun cotton is wound. Immediately in front of these rows of revolving spindles is a long horizontal steel bar—the counter faller shaft—2 feet 9 inches from the ground, which travels with the carriage. When the yarn breaks, the spinner leans over this bar and pieces the ends. The frictional parts of the mule are lubricated by a mineral oil. The atmosphere in this department is kept warm and moist for technical reasons and the men perspire freely. The workers are lightly clad in a shirt and linen trousers, or in overalls, which are washed usually once a week. Southam and Wilson stated that the men's garments showed "a well-marked oil zone, six to eight inches in depth, across the body at the level of the upper part of the thighs and the lower abdomen. This oil penetrates the trousers, and the lower border of the shirt also becomes soaked with it." This soiling, they considered, was due to contact with the counter faller shaft, which was covered with oil thrown on to it from the revolving spindles. On the other hand, it has been stated that, in some mills at any rate, the shaft is free of all oil and the workers' clothes even at the end of the week show no such oil zone. I have had an opportunity of seeing a mule-spinning machine in operation, and though I could not detect any oil on the shaft on running my hand over it, yet I could not help noticing a deep oil smear in the left groin of the attendant of which he himself was unaware. It is possible that in the latest type of machinery the lubricated portion of the spindles is better guarded than in older types. Let us note in passing that the men's arms are exposed to the lubricating oil, but they do not develop epithelioma in that situation. "The continual soiling of the clothes with oil," say Southam and Wilson, "and the knowledge that in other forms of cancer tar and paraffin are recognized as direct etiological agents—a view which has received considerable support from experimental work on animals—suggests that the oil, which has a highly irritant action on the tissues of the skin, may be of considerable importance."

What evidence have we that mineral oils have carcinogenic properties? In my original communication,[2] to which Southam and Wilson presumably refer, I gave the clinical and the experimentally ascertained evidence on the subject. Actually less than 20 cases all told of what is called "paraffin cancer" had been recorded in medical literature. Some of these had occurred in the shale oil works of Scotland, some in the lignite distilleries of the Halle district in Germany, and only two were reported from paraffin refineries in the United States of America. Later search has revealed an account by H. Ehrlich[3] of five cases in Czecho-Slovakia, and one case by Ullmann[4] in Galicia, but the latter states in a footnote that on circularizing medical men practising in the neighbourhood of oil fields in Galicia, Silesia, and Hungary, he learned that 25 cases were known to have occurred. Finally, Scott[5] mentions that during a period of twenty-two years there were 65 cases of paraffin cancer amongst the workmen in the Scottish shale refineries. In all the known instances, with the exception of some of Scott's cases, the patients had been engaged for many years in handling the very crude products containing the more solid paraffins—that is, the fractions of high boiling points—and the scrotum was the part of the body most commonly affected. Scott, however, found that several cases of cancer of the scrotum had occurred amongst workmen who were not employed at the paraffin presses but dealt with subsequent processes, and it is possible that the scrotal epithelioma which they developed was due to constant soiling of the parts with the more refined commercial oils. No case of paraffin cancer has been reported from Germany for the last thirty-eight years, a fact which Kennaway[6] has attributed to some radical change in the methods of distillation or to the adoption of effective preventive measures by the workmen. The rarity of reported cases in America is remarkable: it is probably due to the fact that the unskilled labourers there do not remain long at one occupation, though it cannot be denied that industrial medicine has lagged behind in that country. On the whole, therefore, the clinical evidence that *refined* mineral oils are capable of producing cancer is weak.

In my previous experiments I stated that I had produced tumours in 30 out of 75 mice to which various oils of the shale group had been applied, the tumours being papillomata, epitheliomata, and even sarcomata. One of the products employed was a lubricating oil, classified as "unfinished," and with it we succeeded in producing a true epithelioma. The fact that such a refined oil had carcinogenic properties led us to inquire if skin cancers were at all prevalent in occupations entailing soiling of the clothes with oil, but no information could be obtained on the point. It was considered advisable to work through the whole series of the liquid products of shale distillation to see if the noxious property was retained in the more refined oils or eliminated in the course of preparation of the commercial products. It was rumoured that, though petroleum oils were usually employed for lubrication of machinery in the mills of Lancashire, yet, owing to the uncertainty of supplies during the war, they had to be diluted extensively with native shale oil. As the result of these experiments we ascertained that the more volatile oils, distilled at a relatively low temperature—such as lamp oil—were devoid of tumour-producing powers, whilst the heavier oils—gas oil, cleaning oil, and lubricating oil—were carcinogenic. One interesting result (with cleaning oil) may be detailed:

> The first sign of neoplastic reaction was a very tiny wart appearing 129 days after the commencement of applications, reaching a diameter of less than 2 mm. eight days later. It was very slightly raised above the skin level, but already basal subcutaneous induration was detected, the indurated disc being 5 mm. in diameter. The mouse died at the end of 147 days with an indubitable epithelioma. This is an instance of rapid development of malignancy. Allowing for the two days that elapsed between each scrutiny we can be certain that not more than a week at the most elapsed between the first sign of hyperplasia and the onset of malignancy.
>
> To show how animals differ it may be mentioned that with the same oil one of the mice took thirteen months to develop the first sign of tumour, and some remained refractory for over eighteen months.
>
> (With one of the crude oils, active as regards mice, we failed to induce more than temporary small warts in rabbits, except in one case in which a papilloma appeared after eleven and a half months, increasing slowly till the present time, two and a half years since the beginning of treatment, when it is over two inches in diameter, and probably malignant. Rats and guinea-pigs have proved totally refractory.)

We have thus clear experimental evidence that, with regard to the shale products at any rate, the carcinogenic property is present in the heavier commercial oils. It is highly improbable, however, that the occurrence of mule-spinners' cancer is due to the shale oil ingredients of

* The case has been decided in favour of the plaintiff, a mule-spinner who claimed compensation on account of cancer of the scrotum, which he alleged was caused by the nature of his employment.

lubricating oils alleged to have been used during the war. For one thing, the time is too short for epithelioma to have resulted from their use, and for another, we have the information from the Registrar-General that cancer of the scrotum was prevalent amongst mule-spinners many years before the war.

We were then led to investigate the tumour-producing properties of petroleum oils. To examine the products of every oil well is out of the question. I contented myself by trying the effects of crude oils, untreated in any way, from wells in various parts of the world—from the United States, Mexico, Russia, Galicia, Egypt, Persia, Burma, and Borneo. In all, sixteen different samples were used, the assumption being that the crude oils would probably contain more of the carcinogenic factors than any of the products refined from them. This assumption we now know is not correct. For the testing of each sample 100 mice were used, and a spot of oil was applied between the shoulders regularly three times a week. Unfortunately epidemics during the summer of 1923, combined with the toxic characters of most of the oils, were responsible for the loss of large numbers of the animals, but the experiments seemed to indicate that some oils were effective in producing tumours and that others were more or less impotent. Tumours resulted in the series which were treated with oils from Borneo, Assam, Egypt, Burma, and Badarpur, the last two being the most active, though in no case did a tumour appear till after the lapse of eight months at the earliest. In one animal (Badarpur series) we obtained a tumour composed of both epitheliomatous and sarcomatous elements, the latter exhibiting a fair amount of melanotic pigment. Owing to the small number of survivors I do not feel inclined to attach much importance to the negative results with the other crude oils. One of these in particular, a sample from California, was heated and shown by Dr. Kennaway to be very potent in producing tumours. A specimen of fuel oil, which was probably a mixture of the higher boiling fractions of several oils, produced epitheliomata after six months; it was, in fact, more active than any of the crude oils. At the other end of the scale are the vaporizing oils, such as petrol, and with a sample of petrol we failed to produce any tumour growth whatever, even after fifteen months of applications. It seems, therefore, that the more volatile fractions of mineral oils are devoid of tumour-producing properties. It should be mentioned that all these oils produce epilation and scurfy dermatitis whether they ultimately induce epithelioma or not.

Finally two lubricating oils, of the petroleum group, were taken at random. With one of these—a "light lubricating oil"—no tumours were produced; the other—a "medium lubricating oil"—was carcinogenic. Lubricating oils of the latter class are almost invariably blends of petroleum products from various sources, and contain, in addition, a small percentage of vegetable oils. The oil supplied by any one firm is probably not always of uniform composition, nor does it matter so long as it fulfils the necessary requirements as to specific gravity, viscosity, flash point, etc. Oils of this class are distilled at about 300° C. With the particular sample employed tumours were produced in all the eight mice that survived for eight months.

1. Minute wart appeared in eleven months and very slowly increased. A second appeared in the fourteenth month. Animal died in the sixteenth month. Both tumours small and benign.

2. A wart accompanied by a shallow ulcer appeared in fourteen months, but the mouse was killed and partly devoured by the others a few days later.

3. A small papilloma was noticed towards the end of the fourteenth month. Progress was slow. A second wart arose in the sixteenth month. At the end of seventeen months the tumours are still small and benign.

4. A little papilloma appeared just a week before the death of the mouse in eleven and a half months.

5. At the end of ten months a wart appeared, followed by two others in a week's time. In twelve and a half months there were two horny papillomata, the larger being half an inch high. The mouse died in a little over thirteen months. The histological examination disclosed an unusual condition. Above the level of the skin projected the cornified epithelium, whilst underneath, penetrating considerably below the level of the panniculus carnosus, there was a flask-shaped continuation composed of degenerating whorls of keratin and remnants of muscle fibres, the whole being surrounded by a zone of intense inflammatory reaction. The appearance suggested a degenerating epithelioma.

6. In the seventh month a shallow ulcer was observed. This extended slowly. In eight and a half months a subcutaneous nodule, the size of a pea, was found at the margin of the ulcer. A week later the ulcer showed signs of healing and the nodule was smaller. The mouse died a few days later, and histological examination revealed an epithelioma invading the panniculus carnosus.

7. A wart appeared in eleven and a half months over the right scapula. In twelve and a half months it measured a quarter of an inch in height by the same in diameter. In fourteen months it showed subcutaneous induration. A second wart appeared then and grew fairly rapidly. The mouse died at the end of sixteen months, with *two* epitheliomata.

8. In eleven and a half months a small papilloma appeared. In twelve and a half months it formed a fleshy, not cornified, wart less than an eighth of an inch across. The mouse died in the fourteenth month with a deeply infiltrating epithelioma.

Thus, all the mice which survived treatment for eight months or more developed tumours, which in three cases certainly, and in another probably, were malignant. One of the animals developed two separate epitheliomata. The lubricating oil is slow in eliciting the neoplastic response, much slower than most tars, but once growth is started it is as rapid as with most other carcinogenic irritants.

Our experiments show, therefore, that refined mineral oils such as are used for the lubrication of machinery are capable of producing skin cancer after long exposure, and they go far to prove the contention of Southam and Wilson that mule-spinners' cancer is the result of several years of contact with lubricating oils. But why is the scrotum exclusively affected, whilst the thighs and the arms escape? No satisfactory answer can be given at present. To say that the scrotum is more susceptible to the action of the oil is merely to repeat the question. A similar difficulty faces us if we attempt to explain the localization of chimney-sweeps' cancer. There is still another difficulty. Mule-spinning is not confined to cotton: similar machines are in use in wool-spinning, and so far we have no evidence of any undue liability in wool-spinners to scrotal cancer. In the cotton mills the temperature is high and the air is moist, but not so in the woollen mills. It may be that in the former the heat relaxes the tissues of the scrotum and allows of the entry of oil into the large opened sebaceous follicles.

Accepting the oil as the cause, what measures can be taken to prevent the occurrence of this far too common industrial cancer? Probably it is impracticable to employ vegetable or animal oils instead of petroleum oils for the lubrication of the spindles, even if we could be sure that they had no carcinogenic property, and an attempt to discover safe mineral oils seems foredoomed to failure. It should not be a difficult matter to fit to the machines an effective guard which will prevent the spindle oil being thrown off. Possibly a short thin apron impregnated with cellulose might prove useful in protecting the clothes from being soiled. But however soon preventive measures are adopted it should be realized that cases of scrotal cancer will still occur, though with diminishing frequency, for several years to come amongst the older workmen owing to the delayed action of the irritant.[7]

References.

[1] Southam and Wilson: British Medical Journal, November 18th, 1922, p 971. [2] Leitch: Ibid., December 9th, 1922, p. 1104. [3] H. Ehrlich: *Arch. f. klin. Chirurg.*, 1918, No. 110, p. 337. [4] Ullmann: Beiheft, *Das österr. Sanitätswesen*, 1912. [5] Scott: Eighth Scientific Report, Imp. Cancer Research Fund, 1923, p. 85. [6] Kennaway: *Journ. Indust. Hygiene*, 1924, vol. 5, p. 462. [7] Leitch: British Medical Journal, December 9th, 1922, p. 1101.

NOTE ON CHIMNEY-SWEEPS' CANCER.

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A comparison may be made between the incidence of mule-spinners' cancer and the incidence of the similarly localized chimney-sweeps' cancer. In the years 1910-12 there were 16 fatal cases; in 1913-14 there were 7 (=8 per cent. of total); in 1921-22 there were 10 (=9 per cent. of all scrotal cancers); and last year there were 4 cases of cancer of the scrotum in chimney-sweeps. This gives an average of 4.6 fatal cases per annum. There were in England and Wales, according to the 1921 census, 5,251 sweeps, so that 1 in 1,140 die from cancer of the scrotum every year. The incidence, therefore, is higher amongst sweeps than amongst mule-spinners.

In a previous paper[1] I discussed the peculiarities of the geographical and anatomical distribution of this form of cancer. It is improbable that the soot acts on the scrotum merely as a mechanical irritant: coal dust in miners does not produce a neoplastic reaction there. It must act in virtue of some active chemical fraction, and as *corpora non agunt nisi soluta* it is necessary to look for some solvent present in the skin of the scrotum. Passey[2] had succeeded in producing soot cancer experimentally in mice by frequent applications of an ethereal extract. No such powerful solvent is present in the skin, and I suggested that the active principle of the soot was dissolved in the oily secretion of the sebaceous glands of the human scrotum. Sebaceous fat was therefore obtained from human dermoid ovarian cysts, a quantity of soot was mixed with this in the incubator, and the filtrate—a dark brown oil, liquid at body temperature—was applied to the skin of mice and to the scrotum of a number of rabbits. Among the latter animals two developed warts, but the animals bit these off and they have not recurred; in a third a papilloma appeared after five months, and is still growing. Amongst the mice we obtained in three cases simple papillomata, the earliest appearing thirty-five days after the commencement of treatment; and in two cases epitheliomata. In one of these there was no sign of tumour formation until almost the end of the ninth month, and in the other sixteen and a half months elapsed before the tumour started. In both malignancy supervened shortly thereafter.

The experiments suggest that the sebaceous secretion of the glands of the scrotum is the solvent of the soot in the human subject.

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[1] Leitch: British Medical Journal, July 7th, 1923, p. 1. [2] Passey: Ibid., December 9th, 1922, p. 1112.

A STUDY OF B. ACIDOPHILUS IN HUMAN FAECES.*

BY

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The bacterial flora of the intestinal contents shows great variation at different levels of the alimentary tract in health and in disease. The flora of the faeces as seen in stained films bears little resemblance to the organisms which are obtained by the methods of culture usually adopted for the isolation of pathogenic organisms. By the use of a variety of procedures and different media organisms of many types can be isolated, but the results are unsatisfactory regarded from the standpoint of the total flora. In the film stained by Gram's method numerous Gram-positive bacilli and cocci are seen which do not grow on the ordinary agar or broth media. If the hydrogen-ion concentration of these media is altered the growth which results varies considerably, but is generally composed of Gram-negative bacilli of the colon group and streptococci of the *faecalis* type. As a result it has frequently been stated that the majority of the organisms in the faeces are dead. The contrast between the stained film and the growth on ordinary media is most striking in regard to the absence in culture of the Gram-positive bacilli. These bacilli, however, can be obtained in culture when special methods are adopted to prevent growth of *Bacillus coli*. It has been found that this group of organisms is strongly resistant to acid, and that they survive in strongly acid mixtures which kill *B. coli* and most other faecal organisms. The term "*Bacillus acidophilus*" was given by Moro to an organism of this type, but, as Mereshkowsky and Distaso showed, it would be more descriptive to call them acid resistant rather than acidophile. The term "aciduric" has been suggested by Kendall. In the stools of infants Gram-positive bacilli are found in large numbers, and the film contrasts markedly with that of the adult.

A relationship between the occurrence of these organisms and the diet has naturally been suggested, and research workers, particularly in America, have made combined clinical and bacteriological studies which have elicited some interesting facts bearing on this subject. Diets which consist largely of animal protein are associated with faeces in which *B. coli* predominates, whereas diet which is rich in carbohydrates favours the development of *B. acidophilus* types. The terms "proteolytic" and "aciduric" have been used to describe these two types of flora. The administration of lactose and dextrin by the mouth is particularly favourable to the development of an aciduric type of flora. Cannon has used a simple method of determining the type. This consists in making suitable dilutions of the faeces and in enumerating the relative numbers of Gram-negative bacilli and Gram-positive bacilli in stained smears. This is referred to as the "colon-acidophilus ratio." In intestinal stasis and in complete obstruction the *acidolphilus* bacilli rapidly diminish and the flora becomes proteolytic in type. In starvation the same change occurs. Similarly, in most types of diarrhoea the flora is proteolytic, though certain forms of diarrhoea (fermentative diarrhoea) show a distinctly aciduric type of flora. The influence of diet on the flora in experimental intestinal stasis and obstruction has been investigated by several workers. On diets rich in lactose animals survived longer and clinical differences were apparent in the post-operative behaviour, animals on protein diet being listless and refusing food, while those on carbohydrate diet were active and eager for food. The relation of the flora to the reaction of the intestinal contents has been examined. Rettger and Cheplin found no difference in the hydrogen-ion concentration of the faeces, whether the flora was mixed or aciduric in type. Cannon and McNease, on the other hand, found that there was a direct relationship between the type of flora and the hydrogen-ion concentration of the contents of the caecum, though this was not so apparent when the reaction of the faeces in the lower colon or rectum was considered. With a high animal protein diet the reaction of the contents of the caecum and colon was *p*H 7.0 to 7.1, whereas the addition of lactose in proper proportions led to a reaction in the caecum of *p*H 4.6 with a *p*H 6.2 in the lower colon. In the presence of fermentable carbohydrates both *B. coli* and *B. acidophilus* developed freely, but as the products of fermentation accumulated and the reaction became strongly acid the conditions of growth became inimical to the further development of *B. coli*. In the absence of carbohydrate, *B. coli* assumed a proteolytic activity, and toxic substances, resulting from protein decomposition, were formed.

In the majority of the experiments on the above and similar lines of investigation little attention has been paid to the morphological and cultural characters of the *B. acidophilus*. A review of the recent literature showed that there was much difficulty in regard to the characters by which this bacillus could be recognized. Logan (1914), for example, in an investigation of the intestinal flora of children, described *B. acidophilus* and *B. bifidus* under one group, although he observed differences in behaviour of different strains. McIntosh, Warwick, and Lazarus-Barlow, in a study of *B. acidophilus* occurring in carious teeth, describe two strains differing in cultural and serological characters, to which they have given the name *B. acidophilus odontolyticus*, Types I and II. They are of opinion that these organisms are the cause of dental caries. Rahe (1914), in a study of numerous strains of acid-resistant bacilli from many different sources, described three varieties according to their action in milk and in maltose. In a later communication (1918) he describes four varieties, using glucose, maltose, lactose, sucrose, and raffinose as differential media. During the course of our own work two further papers have appeared which bear on this subject. McIntosh and Lazarus-Barlow, in a further communication on the subject of *B. acidophilus odontolyticus*, give the results of the examination of fifty strains of *B. acidophilus* isolated from the mouth, faeces, and stomach contents of man and animals and of certain strains from milk. These workers comment on the unreliability of fermentation tests, and suggest that differentiation is best made by means of agglutination tests. The results obtained with sixty-seven strains of *B. acidophilus* isolated from human faeces are given by Cannon. All of the strains examined by him fell in the groups described by Rahe.

* This research was carried out with the aid of a grant from the Medical Research Council.

The investigations, of which this paper is a short summary, were conducted almost entirely on the stools of normal subjects, adult for the most part.

Technique.

To tubes of ordinary broth, *p*H 7.6, glacial acetic acid was added in the proportion of 1 per cent. A thick emulsion of the stool was made in salt solution and 0.2 c.cm. added to 5 c.cm. of acetic broth. The tubes were incubated for thirty-six to forty-eight hours, shaken up, and a large loopful sown on plates of ordinary agar. These were incubated for twenty-four to forty-eight hours. With few exceptions growth of acid-resistant organisms in pure culture was obtained; frequently the growth was quite profuse. It was found convenient to allow the plates to stand a day or two at room or incubator temperature in order to bring out differences in colony formation. In none of the experiments was any Gram-negative organism encountered, the acid-resistant organisms being in all cases Gram-positive bacilli or cocci. Single colonies were picked off to ordinary agar, replated if any doubt existed as to purity, and then sown into sugar and other media. It was also found that good results were obtainable by making a heavy inoculation of ordinary broth, incubating for twenty-four hours, adding acetic acid, and incubating again for twenty-four hours. In some cases it was found necessary to use the sediment in the acetic broth cultures, since, if the organisms were scanty, the supernatant fluid might give negative results. There was no evidence in this work that actual growth of *acidophilus* bacilli occurred in the acid broth, and we are of opinion that in most cases these organisms merely survived the exposure to the acid. Further, it was found that 1 per cent. acetic acid agar plates, made directly from the faeces emulsion, did not give growth of *acidophilus* bacilli, although acid-resistant cocci were sometimes got by this procedure. Once the organisms had been isolated growth was readily maintained on ordinary agar. It will be seen later that growth in ordinary broth did not occur, or was very slight, in the absence of fermentable carbohydrate. It is a matter of interest that organisms capable of growth on ordinary agar, and present in considerable numbers in almost any sample of faeces, should not grow on direct plating on ordinary agar or on MacConkey's medium. It would appear that coliform organisms exert an inhibitory effect, but we have been unable to demonstrate this in actual experiment. Only once have we seen colonies of *B. coli* and of *B. acidophilus* on the same plate. In this experiment *B. coli* was present in very small numbers on the plating from acetic broth, and was presumably due to an extremely heavy sowing with faeces which had been imperfectly emulsified.

It was found that *B. coli* survived more readily when hydrochloric acid was used in place of acetic acid. Yeasts also survived exposure to hydrochloric acid, but only on one occasion was a growth of yeast recovered from 1 per cent. acetic acid broth culture. In our experience acid-resisting bacilli in all cases grew on ordinary peptone agar with a reaction of *p*H 7.6. Twelve of our strains were selected and tested on 1 per cent. acetic acid peptone agar slopes. In no case was growth obtained, whereas control subcultures, made at the same time on ordinary agar, grew freely in twenty-four to thirty-six hours. Growth of acid-resisting bacilli and cocci was tested also on agar slopes of different acidity (*p*H 4, 5, 6, and 7) prepared with hydrochloric acid. Growth took place at *p*H 5 but not at *p*H 4. Comparison was made of anaerobic and aerobic cultures, both of the acetic broth and of agar plate subcultures, but no evidence was obtained of appreciable difference. The organisms were found to be facultative anaerobes. The organisms isolated did not produce indol and did not liquefy gelatin. Early in our work it was obvious, from differences in colony formation on agar plates, that different strains of acidophile bacilli were present in the same sample of stool. In two experiments ten different strains were obtained from a single sample of a normal stool, and in other three cases seven, seven, and six strains respectively were got. As a rule every sample of stool gave growth of acid-resistant cocci in addition to bacilli, but these strains of cocci are not dealt with in this communication.

The growth of the bacilli on agar was at first extremely delicate, but after a few days many of the colonies assumed a characteristic form. The long-chained bacilli commonly appeared as granular colonies with raised centres and irregular margins, but sometimes as smaller colonies, regular in outline and with a ground-glass appearance; those bacilli showing curled elements giving colonies in the form of a rosette. Some short-chained varieties showed the feathery colonies frequently described as typical of *B. acidophilus*, others grew as opaque striated colonies raised in the centre, or as small clear colonies with smooth edges. The bacilli not forming chains usually developed as small regular or large irregular colonies, and occasionally granular ones surrounded by a ring of what looked like small flatter colonies. Yellowish slightly feathery colonies were the most typical of those bacilli showing filamentous forms, but a few almost colourless granular colonies with a raised ring around the centre of the colony or flat greyish-brown colonies with faintly striated margins were met with. The most striking feature in colony formation was the marked differences in the colonies of bacilli more or less similar morphologically, and on plates spread from the primary acetic acid broth several of these types of colony were usually present.

When the purity of a strain of bacillus had been established an agar culture was emulsified in salt solution, and by means of a pipette 1 per cent. glucose, lactose, maltose, saccharose, mannite, and dulcite peptone water with the Andrade indicator were inoculated, also litmus milk and broth. An attempt was made by means of the reactions with these media to separate different strains, no heed beng paid to morphology at this stage. Later in the work a further range of substances—inulin, arabinose, dextrin, and raffinose—were employed. These substances gave a further differentiation within each group. In no instance was any organism isolated which gave gas in any of the media. The formation of acid in fermentable media was usually marked in twenty-four hours. In some media acid production was slow and not well marked. Table I shows the results obtained and the groups separated by the use of the glucose, lactose, maltose, mannite, saccharose, and dulcite, and the further differentiation of these groups by the use of inulin, raffinose, dextrin, and arabinose. In a recent paper published during the progress of this work Cannon gives the results of a study of sixty-four strains of *B. acidophilus* and thirty-four strains of *B. acidophilus aerogenes*, obtained mainly from sputum and faeces of normal adults, and a few strains from milk and the intestines of animals. Unneutralized dextrose infusion broth with 0.25 per cent. of glacial acetic acid was used (*p*H 4.8 to 5). After three successive transfers at twenty-four-hour intervals in this medium plates of whey agar or dextrose yeast agar were sown. Colonies were picked and transferred to unneutralized glucose yeast broth. The strains of *B. acidophilus* isolated by Cannon all fell into Rahe's classification (Table III). It will be seen from Table I that of our fifty-two strains forty-four failed to ferment maltose and four failed to ferment glucose. These strains cannot, therefore, be placed in Rahe's classification. Of the two types of bacilli which formed chains, a long-chained and a short-chained variety were readily distinguished. Of the non-chained types, diplobacilli were frequently found, as well as others with no characteristic formation. The majority, including the chained types, were about the size and shape of the chained *B. acidophilus* described by Moro and others, 0.75 μ by 1 to 3 μ. Differences in size and shape occurred in the same chain, and in some strains almost coccoid forms were present. On this account we had, at first, difficulty in obtaining what we could regard as pure cultures of certain strains, and numerous replatings were carried out. This has also been the experience of McIntosh and Lazarus-Barlow. Howe in his work on dental caries comes to the conclusion that the pleomorphism of *B. acidophilus* has been greatly exaggerated, and Cannon is in agreement. Difference in size of the bacilli, both in thickness and length,

TABLE I.

Bacillus.	Morphology.			Glucose.	Mannite.	Maltose.	Lactose.	Saccharose.	Dulcite.	Raffinose.	Arabinose.	Dextrin.	Inulin.	Milk.	Broth.
	Size.	Chains.	Other Characters.												
Inf. C. 6	Small	Few short	Few curled	sl. A	—	—	—	—	—	—	A	—	A	A.C.	—
Inf. M. H. 10	Short	—	Oval	A	—	—	—	—	—	sl. A	A	A	—	—	—
Reid 2	Long thin	—	Angled diplo.—bipolar staining	sl. A	—	—	—	—	—	—	A	—	—	A.C.D.	—
K. 3	Acidoph.	Few short	—	A	—	—	—	—	—	—	—	A	—	A.	—
K. 8	Long thin	V. short	Angled diplo. — filaments; palisade; polar staining	A	—	—	—	—	—	—	A	—	A	A.C.D.	D. granular.
K.A. 5	,, ,,	V. short	Palisade	sl. A	—	—	—	—	—	A	—	sl. A	—	A.C.D.	D.
*Inf. C. 4	Long	Long	Many curled	A	—	A	—	—	—	—	A	—	—	A.C.D.	—
B. 1	Short	—	Singly and clumps	A	—	A	—	—	—	—	—	A	A	A.C.	—
C. 11	,,	Medium	—	A	—	A	A	—	—	—	—	A	A	A.C.	—
*C. 6	Acidoph.	Long	—	A	—	A	A	—	—	—	—	A	A	A.C.	—
C. 33	,,	,,	—	A	—	—	A	—	—	A	—	—	—	A.C.D.	sl. D.
B. 9	,,	,,	—	A	—	—	A	—	—	—	—	—	—	A.C.D.	—
B. 15	,,	V. short	—	A	—	—	A	—	—	—	A	—	—	A.C.	—
S. 2	Short	Short	Curled elements	A	—	—	A	—	—	—	A	—	A	A.C.D.	—
G. D. 7	Acidoph.	Long	—	A	—	—	A	—	—	—	—	—	—	A.C.	—
Innes 2	Short	Short	Filaments; palisade	A	—	—	A	—	—	—	A	—	A	A.C.D.	—
Innes 3	,,	Medium	Palisade	A	—	—	A	—	—	—	A	—	A	A.C.D.	—
Inf. A. 3	Acidoph.	Short	,,	A	—	—	A	—	—	—	A	—	—	A.C.	—
Inf. A. 4	,,	V. short	,,	A	—	—	A	—	—	sl. A	A	sl. A	sl. A	A.C.	—
Inf. A. 6	,,	Medium	,,	A	—	—	A	—	—	sl. A	A	—	—	A.C.D.	—
*C. 30	,,	Long	—	A	—	—	A	A	—	A	—	A	—	A.C.D.	—
C. 29	,,	,,	—	A	—	—	A	A	—	—	—	—	—	—	—
B. 6	V. short	Short	—	A	—	—	A	A	—	—	—	A	A	A.C.D.	—
B. 12	Long	—	Angled diplo.—curved, beaded	A	—	—	A	A	—	A	—	—	—	A.C.D.	—
B. 13	Small	Short	—	A	—	—	A	A	—	—	—	—	—	A.C.D.	—
B. 14	Long	Long	—	A	—	—	A	A	—	—	—	A	—	A.	—
B. 16	Small	Medium	—	A	—	—	A	A	—	—	—	—	—	A.C.D.	—
B. 18	Acidoph.	V. short	Polar staining old culture	A	—	—	A	A	—	A	—	—	—	A.C.D.	—
G. D. 6	,,	Short	—	A	—	—	A	A	—	—	—	A	—	A.C.D.	—
Inf. M. H. 1	,,	,,	—	A	—	—	A	sl. A	—	—	—	A	—	A.C.D.W.	—
K. 7	Long thin	V. short	Filaments; polar staining	A	—	—	A	A	—	A	—	—	—	A.	T.D.
Rattray 3	Short	Short	—	A	—	—	A	A	—	—	—	—	A	A.C.D.	—
An. 2	Acidoph.	Long	—	A	—	—	A	A	—	A	—	A	—	A.C.D.	—
*B. 5	V. short	Short	—	A	—	—	—	A	—	—	—	—	A	A.C.D.	—
Inf. C. 5	Short	—	—	A	—	—	—	A	—	A	A	—	—	A.C.D.	—
K. 1	,,	Short	Filaments	A	—	—	—	A	—	A	—	—	—	A.	T.D.
K. 2	,,	,,	,,	A	—	—	—	A	—	—	—	A	—	A.	T.D.
K. 5	,,	V. short	—	A	—	—	—	A	—	—	—	A	—	A.C.D.	D.
K.A. 8	Long	,,	Palisade	A	—	—	—	A	—	A	—	A	—	A.C. sl. D.	D.
C. 1	Short	—	Slight polar staining	A	—	A	—	A	—	—	—	—	—	—	T.D.
C. 23	,,	Short	Palisade	—	A	—	—	A	—	—	—	—	A	A.C.D.	—
*C. 24	,,	,,	,,	—	A	—	—	A	—	—	A	—	A	A.C.D.	—
Inf. C. 11	,,	Medium	—	—	A	—	—	A	—	—	A	—	A	A.C.D.	—
Inf. A. 7	Acidoph.	Long	—	A	A	—	—	—	—	A	A	—	—	A.C. sl. D.	—
Pratt 3	V. short	—	—	A	A	A	A	A	—	—	A	A	A	A.C.	—
Reid 3	Long	—	Palisade	—	—	—	—	—	—	—	A	—	—	—	—
S. 3	Short	Long	Some curled	A	—	—	—	A	A	—	A	A	A	A.C.D.	—
S. 1	,,	,,	—	A	A	—	A	A	A	—	A	A	A	A.C.D.	—
C. 8	V. short	,,	Almost coccoid	A	—	A	A	A	—	—	—	A	—	A.C.	—
Innes 4	Short	Short	—	A	A	—	A	A	—	—	—	A	A	A.D.	T.
C. 26	Long thick	—	Palisade	A	A	A	A	—	—	—	A	—	—	—	T.
S. 4	Short	Long	Some curled	A	A	—	—	A	A	—	A	A	A	A.C.	—

A = acid. C = clot. D in milk = decolorization. D in broth = deposit. T = turbidity. W = whey. sl. = slight.
Strains denoted by "Inf." were derived from infant faeces. * Indicates strains from which agglutinating serums were prepared.

frequently necessitated our replating cultures after isolation in order to ensure purity. Although some variations in morphology were found in recent subcultures, pleomorphic forms appeared more frequently in older (four to six weeks) cultures, and seemed to be of the nature of involution forms. In some of these older cultures swollen and club-shaped bacilli were also present. Old cultures of some strains showed slight beading or bipolar staining, and the power of retaining Gram's stain was decreased, many definitely Gram-negative elements being present. Angled and straight diplobacillary forms were numerous in many of the strains, and parallelism or palisade grouping was common. One peculiar characteristic noted in three strains, and especially prominent in one (Infant C. 4), was a very marked curling of the bacillary elements. Many of these curled forms were in pairs, and when much swollen simulated large diplococci. When in chain formation these curled forms gave an appearance not unlike spirilla. The filamentous forms were seen occasionally and were of two kinds—one uniform in width, corresponding to the thickness of the bacilli, and the other very irregular in thickness and in outline.

Considerable differences were found also by McIntosh and Lazarus-Barlow in their later work, when they extended their range of sugars from four to ten. The fermentation reactions of a number of our strains have been tested on more than one occasion at intervals of one to three months after isolation. No change in the results was found. McIntosh and Lazarus-Barlow have drawn attention to some alteration in sugar fermentation, particularly in regard to saccharose fermentation, three to twelve months after isolation.

As the fermentation reactions of these organisms were so varied, we commenced the preparation of agglutinating serums by intravenous injection of living cultures into rabbits in order to determine the serological relationships. Agglutinating serums from five strains—C. 30, Infant C. 4, C. 6, C. 24, and B. 5—corresponding to five different groups, have been prepared. The titres of these serums for the homologous organisms varied from 1 in 800 to 1 in 12,800. The results of agglutination tests carred out down to the present time may be summarized thus:

Serum C. 30 agglutinated up to titre the strain An. 2, which was isolated by anaerobic culture and appears in all respects identical with C. 30. This serum also agglutinated *B. acidophilus odontolyticus*, Type I (kindly supplied to us by Professor McIntosh), in dilution of 1 in 800, the full titre of the serum for the homologous organism being above 1 in 1,600. Both C. 30 and An. 2 are very long-chained varieties, but Type I of McIntosh, Warwick, and Lazarus-Barlow does not form long chains, nor do its sugar reactions, tested on our media, correspond to those of C. 30 and An. 2. Serum C. 30 did not cause agglutination of any of the other organisms in the same group, as determined by the original sugar reactions. Serum Infant C. 4 agglutinated no other of four strains tested. Serum C. 6 agglutinated to full titre strain C. 11, which gave exactly similar fermentation reactions to those of the homologous organism. No other strain tested was agglutinated. Serum C. 24 agglutinated strain Infant C. 11, which is also identical with the homologous strain. Serum B. 5 partly agglutinated strain G.D. 6, which differs in fermentation reactions from the homologous organism. The titre of the serum was 1 in 12,800, but G.D. 6 agglutinated only up to 1 in 800. This reaction, as well as the agglutination of *B. acidophilus odontolyticus*, Type I, seemed to indicate the presence of group agglutinins, but on the whole it would appear that the many acid-resistant bacilli isolated by us from the faeces differ as widely in the serological reactions as they do in fermentation properties. It is noteworthy that the agglutination reactions which have so far been carried out do not show the group reactions which McIntosh and his collaborators claim to exist within the *acidophilus* group. A number of our strains very closely resemble *B. bifidus*, recently isolated by Dr. Robert Cruickshank, and one of these strains (C. 24) agglutinates to full titre and shows marked absorption of agglutinins when tested with *B. bifidus* antiserum. The sugar reactions of *B. bifidus* and of strain C. 24, however, do not correspond.

TABLE II.—*Agglutination Reactions.*

Organism.		Serum.	1 in 50.	1 in 100.	1 in 200.	1 in 400.	1 in 800.	1 in 1,600.	1 in 3,200.	1 in 6,400.	1 in 12,800.	1 in 25,600.	Control.
C.	30	C. 30	++	++	++	++	++	++	+	—	—	—	—
C.	29	,,	—	—	—	—	—	—	—	—	—	—	—
B.	6	,,	—	—	—	—	—	—	—	—	—	—	—
B.	12	,,	—	—	—	—	—	—	—	—	—	—	—
B.	13	,,	—	—	—	—	—	—	—	—	—	—	—
B.	14	,,	—	—	—	—	—	—	—	—	—	—	—
B.	16	,,	—	—	—	—	—	—	—	—	—	—	—
B.	18	,,	—	—	—	—	—	—	—	—	—	—	—
G. D.	6	,,	—	—	—	—	—	—	—	—	—	—	—
Inf. M. H.	6	,,	—	—	—	—	—	—	—	—	—	—	—
Rattray	3	,,	—	—	—	—	—	—	—	—	—	—	—
An.	2	,,	++	++	++	++	++	+	+	—	—	—	—
Acidoph.	1	,,	++	++	++	+	+	+	—	—	—	—	—
Inf. C.	4	Inf. C. 4	++	++	++	++	++	++	++	+	—	—	—
,,	6	,,	—	—	—	—	—	—	—	—	—	—	—
Reid	2	,,	—	—	—	—	—	—	—	—	—	—	—
B.	1	,,	—	—	—	—	—	—	—	—	—	—	—
Acidoph.	1	,,	—	—	—	—	—	—	—	—	—	—	—
C.	6	C. 6	++	++	++	++	++	++	+	+	—	—	—
C.	11	,,	++	++	++	++	++	++	++	+	—	—	—
G. D.	7	,,	—	—	—	—	—	—	—	—	—	—	—
B.	9	,,	—	—	—	—	—	—	—	—	—	—	—
B.	15	,,	—	—	—	—	—	—	—	—	—	—	—
C.	24	C. 24	++	++	++	++	++	+	+	—	—	—	—
C.	23	,,	—	—	—	—	—	—	—	—	—	—	—
Inf. C.	11	,,	++	++	++	+	+	+	+	—	—	—	—
B.	5	B. 5	++	++	++	++	++	++	++	++	—	—	—
G. D.	6	,,	++	++	++	++	++	+	+	+	—	—	—

Difficulty in classification of aciduric organisms by cultural and biochemical reactions has apparently been a somewhat general experience. Rahe criticized the work of Grigoroff, Cohendy, Bertrand, and Duchacek on the fermentation of sugars by *B. bulgaricus*, and regards their results as of doubtful value owing to lack of agreement. He stated that there was "little known of the action of *B. acidophilus* on the different sugars." Rahe himself must have experienced the same difficulty. In a paper published in 1914 he divided fifty-four strains into three groups, one of which did not ferment maltose, while in 1918 he made four groups, all of which fermented maltose.

TABLE III.—*Rahe's Classification.*

Type.	Maltose.	Glucose.	Lactose.	Sucrose.	Raffinose.
A	X	X	X	X	X
B	X	X	X	X	—
C	X	X	—	X	—
D	X	X	—	—	—

Of our forty-four strains only six fermented maltose and four did not ferment glucose. A noteworthy feature in the cultivation of these acid-tolerant bacilli was that commonly growth did not occur in sugar media unless the carbohydrate present was fermented by the bacteria. Also many of the cultures did not grow in ordinary broth, in this respect differing from many of those obtained from carious teeth by McIntosh, Warwick, and Lazarus-Barlow, most of which showed uniform turbidity in broth. Those of our strains which showed variable growth in broth formed a

slight deposit at the bottom of the tube, and the medium became turbid or granular on shaking. All strains, on the other hand, grew readily on ordinary nutrient agar *p*H 7.6. Some of the strains, especially the long-chained varieties, were difficult to emulsify in salt solution. All strains grew profusely in glucose broth, causing turbidity or a heavy deposit, but did not grow appreciably better on glucose agar than on ordinary agar. In connexion with this lack of growth in unfermented carbohydrate media, it is interesting to note that the feeding of lactose and dextrin to experimental animals was found by Torrey and by Cannon to result in a great increase in the aciduric bacilli in the intestinal flora. In our table of results it will be seen that several of the aciduric bacilli which have been isolated by us fail to attack these two substances. Nine of our strains fermented dextrin but not lactose, seventeen fermented lactose but not dextrin, thirteen fermented both, and thirteen had no action on either of these sugars. The production of acid in some carbohydrate media was slow with some strains, and required three to five days' incubation.

TABLE IV.—*Reactions of Long-chained Bacilli.*

Strain.		Glucose.	Mannite.	Maltose.	Lactose.	Saccharose.	Dulcite.	Raffinose.	Arabinose.	Dextrin.	Inulin.	Milk.
Inf. C.	4	A	—	A	—	—	—	—	A	—	—	A.C.D.
C.	6	A	—	A	A	—	—	—	—	A	A	A.C.
B.	9	A	—	—	A	—	—	—	—	—	—	A.C.D.
G. D.	7	A	—	—	A	—	—	—	—	—	—	—
C.	30	A	—	—	A	A	—	A	—	A	—	A.C.D.
C.	29	A	—	—	A	A	—	—	—	—	—	—
B.	14	A	—	—	A	A	—	—	—	A	—	A.
S.	4	A	A	—	—	A	A	—	A	A	A	A.C.
S.	3	A	—	—	—	A	A	—	A	A	A	A.C.D.
S.	1	A	A	—	A	A	A	—	A	A	A	A.C.D.
K.A.	8	A	—	—	—	A	—	A	—	A	—	A.C.D.
Inf. A.	7	A	A	—	—	—	—	A	A	—	—	A.C.D.

TABLE V.—*Reactions of Short-chained Bacilli.*

Strain.		Glucose.	Mannite.	Maltose.	Lactose.	Saccharose.	Dulcite.	Raffinose.	Arabinose.	Dextrin.	Inulin.	Milk.
Inf. C.	6	A	—	—	—	—	—	—	A	—	A	A.C.
K.	3	A	—	—	—	—	—	—	—	A	—	A.
S.	2	A	—	—	A	—	—	—	A	—	A	A.C.D.
Innes	2	A	—	—	A	—	—	—	A	—	A	A.C.D.
B.	6	A	—	—	A	A	—	—	—	A	A	A.C.D.
B.	13	A	—	—	A	A	—	—	—	—	—	A.C.D.
B.	16	A	—	—	A	A	—	—	—	—	—	A.C.D.
Rattray	3	A	—	—	A	A	—	—	—	—	A	A.C.D.
B.	5	A	—	—	—	A	—	—	—	—	A	A.C.D.
K.	1	A	—	—	—	A	—	A	—	—	—	A.
K.	2	A	—	—	—	A	—	—	—	A	—	A.
C.	23	—	A	—	—	A	—	—	—	—	A	A.C.D.
C.	24	—	A	—	—	A	—	A	—	A	—	A.C.D.
Inf. C.	11	—	A	—	—	A	—	—	A	—	A	A.C.D.
Innes	4	A	A	—	A	A	—	—	—	A	A	A.D.
K. A.	5	A	—	—	—	—	—	A	—	A	—	A.C.D.
Inf. A.	3	A	—	—	A	—	—	—	A	—	—	A.C.
Inf. A.	4	A	—	—	A	—	—	A	A	A	A	A.C.
Inf. A.	6	A	—	—	A	—	—	A	A	—	—	A.C.D.

Practically all strains produced acid and clot in litmus milk. Decolorization of the litmus from the bottom of the tube upwards was a noteworthy feature. The clot was usually of a soft consistence, and easily spread over the sides of the tube by shaking. With some strains, however, the clot was quite firm. In one case only a considerable amount of whey was expressed. Most strains clotted milk in twenty-four hours, but some required three to five days. Torrey reported attempts to shorten the clotting time of more slowly acting types by repeated transplants into milk medium, but could not hasten clotting. Similar procedure with some of our slow-clotting strains was also unsuccessful.

No relationship between morphology and sugar or milk reactions could be established. Table IV gives the fermentation reactions of all strains showing long chains. The only common characteristic is the production of acid from glucose. Similarly, in Table V there is no correspondence among the short-chained varieties. Among those not belonging to the chain-forming groups there is a like lack of uniformity. Of the sugars tested glucose was fermented by the greatest number of the strains, and dulcite, maltose, mannite, and raffinose by only a few.

SUMMARY.

The results of our work indicate that the acid-resistant bacilli in adult or infant faeces show a considerable range of morphological appearances. An attempt has been made to group these organisms by their biochemical reactions and to determine some of their serological relationships. It is suggested that the term "*B. acidophilus*" covers a considerable group of organisms and that numerous strains may exist even in one sample of stool.

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THE IMPLANTATION OR ENRICHMENT OF BACILLUS ACIDOPHILUS AND OTHER ORGANISMS IN THE INTESTINE.*

BY

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THE view that it was important to establish an intestinal flora consisting of bacteria which cause souring of milk was emphasized by Metchnikoff, who thought by this means many benefits could be conferred involving prolongation of life. Sour milk therapy has been investigated with great thoroughness by American workers (Rettger and Cheplin,[1] Gompertz and Vorhaus,[2] Bass,[3] Kopeloff and Cheney,[4] and others).

The organism principally used is of the *B. acidophilus* type of Moro[5]; this is not the organism most prevalent in the faeces of young infants, especially those breast-fed, which harbour *B. bifidus* in almost pure culture. But the conditions of growth of the latter in culture are somewhat restricted, therefore *B. acidophilus* has been mainly used. In preparing such cultures it is important that Rettger and Cheplin's[1] directions should be followed in order that palatable products may be obtained.

Morphological Characters of B. acidophilus.

In Gram-stained smears from human faeces and from milk and whey-broth cultures, *B. acidophilus* appears as a rather long, stout Gram-positive rod, characteristically

* The expenses of this investigation were defrayed by the Medical Research Council

curled towards the ends. Great variation occurs in length—shorter forms alternate with long filamentous forms, some of which may be partially Gram-negative, especially in old cultures, but also frequently in faecal films. Some varieties of *B. acidophilus* occur as short Gram-positive bacilli with a tendency to chain formation, especially on isolation from rats' or dogs' faeces. In cultures on whey-agar two types of colony of *B. acidophilus*, designated by Rettger and Horton[6] as *X* and *Y*, are seen frequently side by side. These are easily recognized under the low power of the microscope: The former have a decidedly fuzzy appearance, and are indistinguishable from the colonies of *B. bulgaricus*, while the *Y* type is small round or spindle-shaped and is only partly fringed, and at times appears almost perfectly smooth. The latter colonies may be designated crab-like. The two appear to be interchangeable.

The *X* colonies can be differentiated from those of *B. bulgaricus* by the fact that *B. acidophilus* produces acid in 1 per cent. maltose broth after incubation at 37° C. for forty-eight hours, whereas *B. bulgaricus* does not.

Isolation of B. acidophilus from Faeces.

Agar containing 1 per cent. peptone and 2 and 4 per cent. lactose proved efficient in the isolation of the aciduric organisms from dogs' and rats' faeces, but did not give quite so good results in the case of human faeces, for which whey-broth, whey-agar (Rettger and Cheplin[1]), and liver glucose agar (Torrey[7]) were better. On the latter medium *B. acidophilus* colonies appear as small fluffy deep colonies resembling a fleck of cotton, or as flat dingy or globular colonies with serrated edges, and are distinguishable from *B. bifidus* colonies, which are raised, more or less globular, and buff or reddish-brown in colour. As in the case of *B. bifidus*, *B. acidophilus* is acid-tolerant rather than acidophile under cultural conditions.

Generally speaking, the isolation of aciduric organisms is much easier in the case of animal faeces. On numerous occasions considerable difficulty was experienced in the isolation of these organisms from human faeces even when large quantities of milk soured by *B. acidophilus* were being administered, and when direct Gram-stained smears from the faeces showed a considerable proportion of such bacilli.

Experimental Feeding with B. acidophilus Milk to Human Typhoid Bacillus Carriers: the Effect on the Intestinal Flora.

The ingestion of recent cultures of *B. acidophilus* in milk—two and a half pints a day, a third of this amount being drunk thrice daily between meals—in addition to a mixed diet containing approximately 250 to 300 grams of carbohydrate, caused within four days such a transformation of the ordinary mixed intestinal flora of two typhoid and one paratyphoid carriers that the predominant organism was of the *B. acidophilus* type (80 to 90 per cent. of the organisms present in Gram-stained films). The number of coliform colonies on MacConkey agar plates was considerably reduced during the period of administration of the milk. On discontinuance of milk feeding the ordinary mixed flora reappeared in four or five days, while after forty-eight hours no growth of *B. acidophilus* was obtained in whey-agar or whey-broth. Even after feeding with *B. acidophilus* had been discontinued for five days, however, bacteria of this type were still present in small numbers in Gram-stained films.

In order that, if possible, conditions favourable for the persistence of *B. acidophilus* in large numbers might be established, commercial lactose in doses of 6 ounces a day in three equal doses between meals was given, along with the amounts of *B. acidophilus* above mentioned, to two carriers. After feeding with *B. acidophilus* was discontinued the lactose was continued for six weeks; in one case a satisfactory persistence of *B. acidophilus* occurred (abundant *acidophilus* present six weeks after stoppage of *acidophilus* milk feeding), but with the other only slight delay in disappearance of the organisms resulted (less than 5 per cent. of the organisms in stained films were of *acidophilus* type one week after stoppage of *acidophilus* milk feeding).

Additional Factors on which Implantation Depends.

Ingestion of lactose—apart from feeding with *acidophilus* milk—in large quantities (6 ounces a day) can transform the flora, but the results obtained are not so striking as with *B. acidophilus* milk and are somewhat variable, a partial failure being met with in one of the cases tested. Laxatives in conjunction with lactose feeding appeared to aid the transformation, apparently by hurrying on the contents of the small intestine, so that the lactose is not absorbed and is available in the lower reaches of the bowel where the aciduric organisms apparently multiply. The transformation effected by means of a high calorie carbohydrate diet by itself is not so complete as that brought about by *B. acidophilus* feeding in man, but is quite successful in the case of rats.

Implantation of B. bulgaricus.

Acclimatization of this organism in the intestine of man after oral administration has been claimed by Metchnikoff and his followers (Cohendy,[8] Belonowsky,[9] and Leva[10]), but this has not been substantiated by other investigators (Luerrsen and Kühn,[11] Herter and Kendall,[12] Distaso and Schiller,[13] Rahe,[14] Hull and Rettger,[15] and Rettger and Cheplin[1]). Half a litre of sterile milk infected with *B. bulgaricus* and prepared in the usual way was given to three different persons, but in no case was it possible to isolate the organisms from the faeces in spite of calomel being given the previous evening. The failure in repeated attempts to implant *B. bulgaricus* in the intestine of man may be due to the fact that, unlike *B. acidophilus*, it is not a normal inhabitant of the human intestine.

Feeding with Special Types of B. coli.

For a period of a month two enteric carriers were fed with amounts up to 4 ounces thrice daily of milk inoculated with *B. coli* of the *lactis aerogenes* variety and incubated at 37° C. for twenty-four hours. The strain employed in these experiments was isolated from the faeces of a *B. paratyphosus* B carrier. As there was no marked alteration of the intestinal flora and no predominance of the characteristic colonies of *B. lactis aerogenes*, a vaccine was prepared of the organism, which was injected into one of these patients subcutaneously, commencing with 5 millions and rising by approximately doubling doses to 1,000 millions, the doses being given at two to four day intervals. At the same time feeding with the organisms was continued as before. The flora was now so transformed that *B. lactis aerogenes* was present almost in pure culture in direct MacConkey agar plates from the faeces. After stoppage of the administration by mouth of *B. lactis aerogenes* only small numbers of these were found for the next two or three weeks, showing that no permanent implantation had taken place. A similar failure was experienced on feeding milk cultures of an inosite-fermenting type of *B. coli* in the same case. Thus the experimental feeding of bacteria not normally present in the intestine failed to cause their implantation in the intestine as has been generally found. But after vaccination implantation occurred for a time. This result appears to agree with that of Raubitschek,[16] who was able to implant *B. prodigiosus* and other organisms in the intestines of rats and dogs after preliminary immunization by a vaccine of the same organism.

The Effect of B. acidophilus and Lactose Feeding, etc., on the Reaction and Consistency of Faeces.

The reaction of the faeces was not influenced by the administration of *B. acidophilus* milk or lactose, but appeared to be influenced by milk inoculated with *B. lactis aerogenes* and *B. coli* (inosite-fermenting type), being rendered acid thereby. The character of the faeces is soft, moist, odourless, and of a light yellow colour, during the taking of milk soured by *B. acidophilus* or the ingestion of lactose in large quantities. This was very evident in comparison with the faeces of other typhoid carrriers under observation and of the same carriers under other régimes, whose stools were frequently hard-formed, thus rendering the isolation of the enteric organisms much more difficult, if not impossible.

Conclusions.

1. Implantation or enrichment of aciduric organisms (*B. acidophilus* type) in the intestine occurs in the human subject as a result of feeding with cultures—for example, in milk; this result is facilitated by administration of lactose and diet rich in carbohydrate, but these alone are not so effective.

2. The organisms rapidly disappear when feeding with cultures is stopped. But they may persist in some cases as a result of continued ingestion of lactose.

3. Implantation of foreign types of *B. coli* may succeed provided that vaccination with the organism is practised along with feeding with cultures (in confirmation of Raubitschek).

4. The predominance of *B. acidophilus* in the intestinal flora as a result of ingestion of cultures seems to relieve constipation, but does not notably affect the reaction of the faeces.

5. The excretion of typhoid and paratyphoid bacilli in the faeces by chronic carriers was not influenced, although *B. coli* was to a great extent suppressed by feeding with *B. acidophilus* milk.

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Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

PULMONARY EMBOLISM.

In reference to Mr. Lockhart-Mummery's paper on the above subject, published in the British Medical Journal of November 8th (p. 850), the following case of death from pulmonary embolism following reduction of a hip dislocation is of interest.

A collier, aged 39, early in the morning of March 22nd, 1923, was injured underground by a fall of stone, weighing several hundredweights, on the back of the right thigh. He was taken to the local hospital, where, under an anaesthetic, an attempt was made to reduce a dislocation of the right hip. This failed, and on the same day he was sent to the Royal Infirmary, Cardiff, and admitted at 5 p.m. An obturator dislocation of the right hip was found, and an anaesthetic given immediately. First attempts at reduction resulted in the movement of the head of the femur to the back of the acetabulum; a further attempt produced reduction. The patient was put to bed with the legs tied together. The condition and reduction were confirmed by radiographs.

On March 23rd the patient had much pain in the right hip and difficulty in passing water. The following day the right ankle was very swollen and blue; there was general swelling of the right limb. On March 27th the pain was less, and the ankle swelling was going down.

On April 1st, at 3 p.m., he had sudden pain in the right side of the chest, with marked cyanosis and dyspnoea, and blood-stained, frothy, fluid expectoration; the pulse was weak and rapid. At 6 p.m. the breathing was more laboured and the pulse weaker. He died at 7.30 p.m.

At a full necropsy, carried out by Dr. H. A. Haig on April 2nd, the following conditions were found: Embolus in the form of a "riding clot"—that is, astride the bifurcation and blocking both branches of the pulmonary artery; thrombosis adjacent; marked congestion and oedema of both lungs; heart enlarged, both ventricles dilated; subperitoneal tissue, in region of sacrum and right iliac fossa, oedematous; *ante-mortem* clot in right external iliac vein. The pulmonary specimen is in the pathological museum at the Royal Infirmary.

The primary injury and the two manipulations under anaesthesia bruised the adjacent femoral vein, and this and the subsequent immobility produced stasis and thrombosis there, these spreading to the external iliac vein. On the tenth day after the injury a portion of the clot in the external iliac vein was detached and carried to the bifurcation of the pulmonary artery, blocking both its branches. The resulting strain on the heart from obstruction to the circulation between its right and left sides caused death in four and a half hours.

Sepsis is ruled out as a causative factor in this case.

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DERMATITIS CAUSED BY PEDICULOIDES VENTRICOSUS.

The general manager of the Docks recently reported to the Medical Officer of Health of Bristol the occurrence of a highly irritating rash among dock labourers engaged in unloading barley from Morocco, which was attributed to spicules penetrating the skin.

On visiting the ss. *River Lagan*, one of the ships concerned, a number of labourers were found to have a closely-set but discrete papular rash on the arms, neck, and face. The back, chest, and abdomen were also affected, but to a lesser degree, and here the rash was more widely distributed. In no case were the legs affected. No constitutional effects had ensued among the patients examined.

The barley was of excellent quality, and to the naked eye very clean. Some of it was screened, and the dust was found on microscopic examination to contain the mite *Pediculoides ventricosus*,[1] which appears to be a parasite of the caterpillar of the cotton moth. In some samples only one or two were discovered after a long search, while in others mites were present in practically every field. For an unknown reason, only females were found, no males or gravid females being present in these specimens. A long and careful search is necessary, as many negative samples may be followed by one containing large numbers of mites.

The disease shows little tendency to spread from one person to another, although the labourer's family may become infected apparently if much dust is carried home on the clothes. The mite does not burrow under the skin, and does not persist for long on the human body. Soothing ointments and bathing with warm water containing soda were recommended, and as a prophylactic measure smearing the exposed parts with grease was advised, followed by a bath after work, a procedure which is reported to have produced good results in America.

Dust blown from the barley will apparently carry the mite and so cause the disease. We are informed that in another port the inhabitants of some cottages quite close to the dock where Moroccan barley was being unloaded developed the disease, although not in contact with the grain. The captain and the mate of the *River Lagan* were affected, although they had not actually handled the barley. This is readily intelligible when one sees the great numbers of mites present in small quantities of the dust.

The name "barley itch" is to be deprecated: it gives patients the impression that they are suffering from the much more serious ailment to which the name "itch" properly belongs, and of which the pathology is essentially different, although it is also caused by a mite. In addition the parasite is found on other vegetable substances, giving rise to a similar dermatitis—for example, cotton seed, as reported by Nixon,[2] to whose paper I would refer those who wish to see some of the best illustrations published of the mite.

Although of little harm beyond the annoyance caused by the itching and the consequent loss of sleep, the disease is of considerable economic importance. Dock labourers require up to 10s. a day extra pay when handling this grain, and certain port authorities are even considering whether they shall refuse to allow it into their docks at all. The majority of labourers who handle the grain develop the disease, but a few exceptional individuals seem to be immune. The problem is also of some interest owing to the fact that recently there has been a large increase in the amount of barley imported from Morocco.

We are indebted to Dr. Henderson, of the Department of Zoology in Bristol University, for confirming our opinion as to the identity of the mite.

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Reports of Societies.

CONCEPTIONS OF CONSCIOUSNESS.

Dr. C. S. Myers devoted his presidential address in the Section of Psychiatry of the Royal Society of Medicine, on November 11th, to certain views on the subject of consciousness, gathered, he said, from a study of pure psychology, but which he hoped might be of service in the allied field of medical psychology.

Dr. Myers described the chief or one of the chief functions of consciousness as the selection by the individual of alternative stimuli. If, owing to the uniformity of external conditions, or—what came to the same thing—the immobility of the organism, the individual was unable to alter its relation to its environment, consciousness could hardly arise. The object of consciousness was to maintain a favourable environment and avoid an unfavourable. But if the consciousness was to act effectively in its selection, relatively small variations in the environment must differ appreciably in the reactions they produced. It was also the task of consciousness to co-ordinate all the past and present experiences of the organism so as to give direction to its future activities and choices of environment. Dr. Myers instituted a parallel, in the realm of mental activity, to the two forms of activity of living substance—the one, intensive and momentary, the other, moderate and prolonged. The contractions of striated muscle illustrated the first of these, and of unstriated the second. Was it too fanciful, he asked, to try to distinguish these two forms throughout mental activity, even up to the highest conscious processes—on the one hand, the momentary and, so to speak, mechanical acts of expression in general, and, on the other hand, the long-continued and relatively persistent sets of attitudes or mental postures of a directive character? He rather deplored the exaggerated importance now attached to the affective consciousness, which had led even to such things as a slip of the tongue or the process of forgetting being invariably attributed to emotional conflict and inhibition. It was also held—a view which he was unable to accept in its entirety—that there was a sort of common fund of affective energy—a single *libido*—that could be drained off into one or other channel of mental activity in such a way that what one channel gained necessarily impoverished the others. Dr. Myers held that it was unreasonable to suppose that the "energy" informing human acts was derived solely from affects, although it might be considered that—using the term in its widest sense—the attitudes or mental postures served as keys to unlock the energies resident in the acts. It was unreasonable also, in his opinion, to suppose that acts depended on a kind of drainage from one channel to another. The mind was not comparable to a vast sewerage system in which the active channels drained off energies from channels which were in so far rendered inactive. The act of inhibition involved as much work as that of excitation.

Finally, Dr. Myers turned to consider the nature of consciousness itself. There was a time, he said, when mind was regarded as the product of the brain, just as bile was regarded as the product of the liver; this was succeeded by an age when mind and living matter were regarded as absolutely different in kind, so that it appeared absurd to compare mind with bile as a secretion of living substance. From this there grew up on the one side a theory of psycho-physical parallelism, and, on the other, of interactionism in which the mental and physiological processes were regarded as in some respects interdependent, and, according to circumstances, influencing and controlling each other. Times had now changed. It was no longer possible to regard matter as composed of inert atoms. The structure of the atom was revealed as a constellation of ions, each of which appeared to be a charge of electricity. Matter was coming to be regarded as a manifestation of electrical forces—in other words, as the product of activities. What, then, of mind? Was not this likewise the product of activities? Was the difference between mind and matter so fundamental as it appeared a century ago? On considering mind and living matter, the distinction was reduced almost to vanishing point. Essentially the same purposive directive characteristics which distinguished living from dead matter distinguished also—raised to a higher power—mental activity from the activity of other living tissues.

TREATMENT OF EMPYEMA.

At a meeting of the Liverpool Medical Institution on November 6th a discussion of the treatment of pleural empyema was opened by Mr. Thelwall Thomas.

Mr. Thomas alluded to a discussion in 1893, when he brought upon himself serious criticisms for daring to advocate excision of a portion of rib to facilitate free drainage. He discussed empyema with and without pneumonia, and emphasized the necessity of repeated aspiration in severe cases of empyema, complicated with pneumonia, to relieve serious symptoms of toxaemia and asphyxia before resorting to incision—a line of treatment confirmed during the severe war epidemic. He strongly advised local anaesthesia, both as a preliminary to exploratory puncture and as the only method of anaesthesia for the subsequent operation. The site of election was below the angle of the scapula, a portion of the eighth or ninth rib being excised, and the pleural opening being made sufficiently large to admit two fingers and facilitate the removal of masses of fibrin. Since the routine performance of this operation chronic empyema had been much less frequent. Mr. Thelwall Thomas mentioned the value of *x*-ray examination in doubtful cases. Tubes for drainage should be half an inch in diameter at least; he deprecated the use of safety pins as "land anchors" for the tube, suggesting instead a strong hairpin pushed through the tube and the limbs bent at right angles. Chronic cases necessitating Dakin treatment, or plastic operations, had become rare owing to increased efficiency in drainage; antiseptic dressing should be used. Exercises to expand the lungs and good feeding were essential. The operation of incision, drainage, and immediate closure he considered severe and uncertain in its results.

Mr. John T. Morrison confined himself to discussing how the development of chronic empyema could be prevented. This might be looked at from two points of view—the early expansion of the lung, and the prevention of infection. The first should be encouraged from the start. The ideal method—primary closure of the wound—being still too risky for general use, valvular drainage should be employed. Personally he favoured connecting up a short wide drain with a tube hanging over the bed, the tube end passing under the surface of fluid in a bottle on the floor. The tissues must, of course, fit snugly round the drain. This made an air-tight and water-tight joint, so that there was no necessity to touch the dressing for five to eight days. The prevention of mixed infection was impossible if the wound remained open. If possible, the drainage tube should be removed at the first dressing; it might be as early as the third day to the fifth if the lung had expanded and adhered to the parietes round the drain, as it often did. The early removal of the drainage tube appeared to him to be the safe and reasonable compromise between immediate suture and prolonged drainage of the chest.

Sir James Barr dealt with the physics concerned. When an operation for the evacuation of the pus was necessary, the object should be to prevent, as far as possible, the collapse of the lung. The incision should be made posteriorly, as low as thought desirable, and in a line with the lower angle of the scapula. The patient should lean towards the affected side, and an assistant should compress that side of the chest. A short tube should be kept in for a few days so as to prevent the wound closing, and the wound should be covered with a piece of sterilized oiled silk, so as to act as a valve to prevent air entering, but allowing the pus to escape. The patient should frequently blow into a Woulff's bottle or piece of rubber tubing to keep the lung expanded. When a rise of temperature occurred the surgeon frequently concluded that it was due to lack of free drainage and retention of pus; he then proceeded to enlarge the wound and work further mischief, whereas the

rise of temperature was nearly always due to secondary infection of the wound. When the wound was dry and glazed constant irrigation should be at once adopted, either with Dakin's tubes, or by immersion in a warm saline bath. The water in the bath should contain 0.9 per cent. of sodium chloride. Attention to minute details was necessary for success.

Mr. K. W. Monsarrat considered that the appropriate treatment of empyema was dictated by the type of infection in each case. In streptococcal cases an early thoracotomy was often inadvisable. In tuberculous cases the results of open operation were usually disappointing; sinuses in these cases tended to persist indefinitely. In pneumococcal cases he held that there was no rival to adequate drainage, tube drainage being dispensed with at the earliest possible moment. He did not use any special measures; he considered that the essentials of technique were an opening wide enough for the evacuation of coagulum masses and a tube large in diameter and short in length. Examination of the discharge was the best guide in choosing the time for dispensing with the tube.

Dr. Hubert Armstrong recalled the danger of acute oedema of the lung and syncope in exploratory puncture, and denied that it could be averted by previous local anaesthesia. There was no such danger in the exploration of an empyema, but only when the needle entered the lung in chronic pneumonia. He considered it advisable to aspirate in cases where the fluid was only turbid, and to postpone open operation till it had become frankly purulent. The extremely low operation was not without danger of injury to the diaphragm and consequent infection of the peritoneum.

Dr. J. C. Matthews referred to those cases, usually following pneumonia, in which aspiration produced a thin turbid fluid with a high bacterial content. It was well recognized that these patients, if submitted to immediate operation, became very ill; he suggested that this was due, not so much to the infective nature of the fluid, but to the fact that, in the absence of adhesions between the lung and chest wall, operation induced a complete pneumothorax with consequent collapse of the lung and displacement of the mediastinal contents to the opposite side.

DEEP X-RAY THERAPY.

At a meeting of the Brighton and Sussex Medico-Chirurgical Society on November 6th, Dr. E. F. Maynard, the President, in the chair, Dr. W. Barrington Prowse read a paper on deep *x*-ray therapy.

Dr. Prowse commenced by pointing out that though *x*-ray treatment, like surgery, had its definite limitations, yet in many cases it might alleviate suffering or prolong life when no prospect of cure was present. The main purpose of his paper was the subject of *x* rays in relation to malignant disease; in particular he wished to speak of the more scientific and accurate applications of *x* rays for therapeutic purposes, especially as employed at Erlangen. The work of Professors Seitz and Wintz at that university had raised deep therapy to the rank of a scientific and accurate procedure, and had led to greatly improved results. Even by the older methods relief of pain, healing of ulcerated surfaces, disappearance of a growth—at any rate for a time—had been effected, but measurements and dosage were variable. Now the dose could be measured fairly accurately both on the surface of the body and at given depths, and the now established reactions of normal and diseased tissues to different quantities of rays gave them some basis for the dosage. Apparatus also had been improved, rendering possible the use of the necessary heavy and accurate dosage of rays of sufficient penetrating power and homogeneity. *X* rays had a profoundly destructive action on all tissues when administered in sufficient quantity; in smaller doses they appeared to stimulate, though this had been disputed. The action of *x* rays on living tissues varied in degree; young and rapidly growing cells, such as those of embryonic type, were more susceptible than older cells of fixed type. The cells of new growth, being largely of embryonic type, were, in varying degree, more susceptible than most of the body cells of fixed type.

Seitz and Wintz, at Erlangen, had determined the quantities of *x* rays which produced biological changes in tissues, normal or diseased, while Kronig and Friedrich of Freiburgm, working on different lines, had similar results, giving the same reactive sensitiveness for individual tissues. So was established a basis for estimating the necessary dosage in deep *x*-ray therapy. He defined the latter as being the administration of an accurately measured quantity of rays, for curative purposes, to the whole of a diseased area within the body, such quantity being the minimum which would destroy the vitality of the diseased tissue to which it was applied. In this accurate measurement lay the difference between this and the older methods. Depth was variable; the tissue treated might lie in the centre of the body or at the surface. He did not like the word "intensive," ignoring measurement and conveying the impression of extreme intensity, though this was no greater than in the older methods. The treatment was intensive in the sense that it aimed at giving the full necessary dosage within a short time, instead of in divided doses over a long period. Dr. Prowse thought that the immediate application of the total dose was the method of choice, as a rule, when dealing with an existing malignant growth, except where there were positive contraindications. Ten years ago it had been noticed that malignant growths exposed to *x* rays gradually suffered diminution of their sensitiveness to the rays, and Sidney Russ had recently further established, by experiments on rat sarcoma, that this acquired resistance was handed down through many generations of cells from those originally irradiated. This was a strong argument in favour of the immediate application of the total dose. The single dose was more accurate, smaller in quantity in the end, and saved time, which was important in dealing with cancer. Those who advocated divided dosage laid stress on the fact that recovery from these doses was more rapid in the normal tissues than in the tumour, on the absence of *x*-ray sickness, and on the great general disturbance of the body frequently seen after the single dose, changes in the blood, and possible injury to healthy organs. These latter dangers might also be present in the divided dose. Dr. Knox had suggested that the control of cancer and other diseases by radiations in divided doses should be aimed at, but was this possible? Many cases of cancer had been checked in their progress by *x*-ray treatment carried on at intervals, but in the end the patients had succumbed; after a time *x* rays had appeared to lose their power. He did not suggest that the single lethal dose was applicable to every case. Each case must be considered on its merits, and the arguments against the single massive dose had more weight in cases other than those of existing malignant disease. The prime object of the Erlanger treatment of cancer cases was the destruction of the vitality of the cancer cells. There followed breaking down of the tumour, elimination of the products of disintegration, and building up of healthy tissue. Wintz attributed the first of these entirely to the "destructive momentum"—namely, *x* rays; elimination, etc., depended on the general biological condition of the whole body.

In dealing with a patient sent for *x*-ray treatment, the first thing was verification of the diagnosis, but there was a valid objection to test-excision or curetting if avoidable. Then the general condition of the patient must be considered. The size of the tumour was important, first, on account of the possible difficulty of producing a lethal effect upon all parts of it, and secondly, on account of the general reaction which might result from the destruction of a large growth, raising the question whether the body was equal to the strain of elimination and recuperation. Further inquiries should include metastases, the blood, the excretory functions, previous illnesses, the skin, especially as regards former irradiations or applications capable of producing irritation or secondary irradiation. The possibility of adhesions fixing coils of intestine within the area of irradiation was very important, also any inflammatory state of the intestine or bladder. Close collaboration was, therefore, necessary between the medical attendant, radiologist, and surgeon. The preparation of the patient for irradiation should include rest, effective emptying of the bowels, and regulation of diet. Some abdominal and pelvic cases were

irradiated fasting. An injection of heroin or morphine and scopolamine was sometimes necessary. With regard to general considerations of irradiation, the object was to apply to the whole of the diseased area a dose of *x* rays suitable for the destruction of the vitality of the malignant cells without serious injury to the skin and normal tissues. This was generally more easily done in the case of deeply situated tumours than in the case of those on the surface. When the tumour was on the surface it was more difficult to get sufficient dosage without injury to the skin. The total time required for the irradiation might be several hours, and it was often necessary to have intervals, bearing in mind that the dose was to be completed within about two days. All possible provision must be made for the patient's comfort, and for the protection of those parts not being intentionally irradiated.

After-treatment was as important as irradiation, since, after the destruction of the vitality of the malignant growth, reparation of injured healthy tissue, elimination of products of disintegration, sustaining of the body against malignant disease, and restoration of healthy tissue had all to be undertaken. These depended mainly on the condition of the body, but rest, diet, fresh air, attention to excretion, and suitable diet were all of assistance. Wherever local irradiation had caused local lowering of vitality, the tissue or organ affected must have rest and be protected from all irritation. *X*-ray sickness was generally lessened by regulation of the bowels before irradiation and the administration of a hypnotic. Injury to the blood depended directly upon the quantity of rays absorbed, and generally righted itself in about six weeks; recovery should be helped by medicinal treatment, fresh air, and sunlight. For elimination of the products of disintegration and the restoration of healthy tissue they had to depend upon the resistance of the body and upon general care and treatment. *X*-ray therapy for carcinoma might seem a formidable proceeding, but carcinoma was a formidable disease, and therefore justified some risks being taken.

At the commencement of the meeting Dr. W. B. PROWSE showed two cases treated by *x* rays: (1) sarcoma of the back, (2) carcinoma of the breast. Dr. A. W. WILLIAMS also showed two cases: (1) a severe case of lupus vulgaris of nose and upper lip cured by carbon arc light baths, (2) lupus vulgaris of nose, cheek, lip, buccal mucosa, and larynx treated by sunlight baths and eosin.

TREATMENT OF SPASTIC PARAPLEGIA.

A CLINICAL meeting of the Aberdeen Medico-Chirurgical Society was held on November 6th, the President, Dr. G. M. DUNCAN, in the chair.

Mr. A. MITCHELL showed two children with spastic paraplegia treated by Stöffel's operation. He pointed out that small degrees of deformity might be treated by continuous fixation followed by general rhythmic exercises, preferably to music. Intermittent forcible passive movements and massage should be forbidden, since the spasticity was usually increased by these measures. More severe cases must be treated by operation, with the aim of enabling the patients to walk. The main types of operation were three—resection of the posterior nerve roots; section and suture of a main nerve trunk, such as the sciatic; and resection of portions of certain motor nerves in order to restore the muscular balance. Such motor nerves were the branches of the obturator nerve, and the nerves to the gastrocnemius and the soleus; occasional tenotomy of the adductors in addition was required. This third method had been employed in the cases shown, and both patients were now able to walk and to attend school.

Mr. W. ANDERSON, discussing these cases, referred to the recent work in Australia of Hunter and Royle, who advised division of the second, third, and fourth rami communicantes of the sympathetics. Mr. Anderson had seen four patients treated by this method, but thought them still rather spastic.

Dr. W. BROWN showed a child of 23 months with tuberculous peritonitis, dactylitis, and lupus verrucosus. The abdominal condition had been treated by operation followed by mercurial inunction, and was now greatly improved. He also showed a child of 14 weeks with congenital heart disease.

Mr. F. K. SMITH referred to the rarity of tuberculous dactylitis in adults, and asked whether the patients generally died in childhood.

Dr. G. ROSE confirmed the rarity of this condition from his examination of all school children of 13 years in Aberdeen for the last fifteen years. Dr. BROWN agreed, and said that in his experience such cases were almost always subjects of a multiple tuberculous infection and did not live long.

Mr. ANDREW FOWLER showed two cases of severe bilateral Dupuytren's contracture in adult males, treated by multiple subcutaneous fasciotomy under local anaesthesia. The cases were discussed by Mr. F. K. SMITH, who suggested that as the fingers were now extended the palmar fascia might be excised to prevent the possibility of recurrence, Mr. G. H. COLT, Dr. H. R. SOUPER, who referred to a good result obtained by Gill's operation—excision of the palmar fascia through a transverse incision and the implantation of a fat-fascial graft, Mr. W. ANDERSON, Mr. A. MITCHELL, and Dr. CRUICKSHANK, who raised the possibility of treatment by radium on the analogy of its success in cases of keloid.

Mr. F. K. SMITH then showed skiagrams of two cases. The first was a tumour of the upper end of the femur, in a man of 51, with a fracture of the femoral neck as the result of a slight accident in June, 1923. Tissue removed by exploratory operation at that time was reported as "ossifying chondroma." Operation was not considered advisable, and the patient did not report again till recently, when definite changes for the worse were seen on skiagraphy. This case was discussed by several members, and the general impression was that the tumour had now taken on sarcomatous changes, and that radium was the only possible method of treatment. The second case was one of a girl of 17 with pyuria and some slight tenderness and enlargement of the right kidney. Full examination by clinical and bacteriological methods—ureteral catheterization and cystoscopy, *x* rays, and pyelograms—showed irregular dilatation of the right ureter, a pyonephrotic right kidney, calcareous deposits in the mesentery, and an oval calculus in the lower end of the left ureter, with dilatation and septic changes of the left kidney pelvis. Tuberculosis had not been found. This case was discussed by Dr. INNES, Mr. A. MITCHELL, who suggested lavage of the renal pelves, Dr. ROBERT BRUCE, and Dr. CRUICKSHANK. Mr. SMITH, in reply, stated that his proposed treatment was to estimate the separate functional activity of each kidney by the administration of urea and ureteric catheterization, to remove the calculus, and then to treat on medical lines. In his opinion, if the case were tuberculous, there would have been signs in the bladder or at the orifices of the ureters by the time the disease in the kidneys had reached its present stage.

PELVIC PAIN.

A MEETING of the Section of Obstetrics of the Royal Academy of Medicine in Ireland was held on October 31st, when the President, Dr. LOUIS CASSIDY, read an address on pelvic pain.

Dr. Cassidy said that pain was one of the common symptoms which brought a woman to consult a gynaecologist. The most fatal diseases in gynaecology, such as cancer, were generally associated with pain only in the later stages: when pain made its appearance the case was generally inoperable. The most common cause of pain in gynaecology was of abdominal origin. The pelvic and abdominal organs were insensitive, but affections of the parietal peritoneum were appreciated by the patient as pain. There were in the viscera no sensory nerves—a point thoroughly established by animal experiments. Pain affecting these regions was referred pain, the result of an affection of the parietal peritoneum. The task of localizing pain in the pelvis presented many difficulties. Some help might be obtained from a rough topographical outline of the abdomen, a horizontal line being drawn through the umbilicus, and a perpendicular one at right angles to this.

Pain in the middle line, below the umbilicus, was generally associated with a lesion of the uterus or the bladder. Pain on either side of the middle line would probably be referable to the adnexa. The appendix also gave rise to many atypical symptoms. The hernial openings should always be palpated when a woman was in the erect position. Umbilical hernia might sometimes be the cause of pain. In abdominal pain in virgins it was wise to think first of the appendix, and in such cases rectal examination should never be omitted. A condition sometimes simulating acute appendix was the rupture of the Graafian follicle in the menstrual period. Pain proceeding from the kidney or ureter rendered the ureter in its vaginal course peculiarly sensitive to pain. According to some authorities left-sided pain was due to a varicose condition of the veins of the pampiniform plexus, which condition might be exceedingly difficult to diagnose. Left-sided pain was also often caused by an affection of the colon. Sacral pain, a common affection in women, had very little to do with an affection of the genital organs, and rheumatic conditions were often responsible. Therapeutic measures must be based on accurate diagnosis; the general health of the patient was related to her appreciation of the intensity of the pain.

Mr. SETON PRINGLE was not sure of the utility in diagnosis of the so-called areas of referred pain in visceral disease. Left-sided pelvic pain was commonly associated with stasis; it was increased by constipation and during the menstrual period. He associated this pain with the occurrence of Lane's sigmoid kink, though in his experience many cases were not relieved by correction of this congenital abnormality. He mentioned four cases of patients suffering from acute pain in the right iliac fossa associated with vomiting, slight rise of pulse rate, and some increased tension low down in the right iliac fossa, but without any rise of temperature or definite rigidity. On operation a rupture of a large Graafian follicle was found, a few drachms of blood having escaped into the pelvis. He found it difficult to reconcile the acute condition produced by this slight haemorrhage with the very slight reaction commonly caused by an accumulation of pus in the same locality.

Dr. A. R. PARSONS mentioned the case of a woman complaining of pain in the right iliac fossa. He treated her for a time, and she was also seen by a surgeon, but as she was not improving she was, after examination, told that she was suffering from congestion of the ovaries, and treatment was recommended; but this also did no good, so she then consulted another gynaecologist. In the course of an exploratory laparotomy an abscess was found in the right ovary with an adherent appendix. Complete hysterectomy was performed, and the patient recovered.

Dr. BETHEL SOLOMONS said that the rules for diagnosis according to the position of the pain in the abdomen as suggested by the lecturer were not applicable to practice: in the diagnosis of gynaecological pain a careful bimanual examination with other diagnostic methods was usually more valuable than localizing the site of the pain. The amount of pathological change present did not in any way correspond to the degree of suffering: a woman with a large tumour or tuberculous tubes might have no pain, while some slight ovaritis or inflammatory band was productive of much pain. Whilst it was true that pain in the lower abdomen was not always gynaecological, it was also true that pain away from this region was often gynaecological. A striking instance of this was sciatica, and Dr. Solomons described several cases of apparently incurable sciatica which had been cured in some instances by a subperitoneal Gilliam's operation, in others by removal of myomas. He added that this showed clearly that the presence of adhesions was not a necessary factor in pain. Pain on the left side was often due to a thickened ovarian cortex; this was relieved sometimes by resection of the ovary with removal of small cysts, in others by scraping the cortex. Pain on the right side, when referred to the ovary—especially when the latter was bound down to the broad ligament and was haemorrhagic—was often caused by an endometrioma. His practice was to remove the appendix if it was obviously inflammatory, if there was any pelvic peritonitis, or if the patient lived far away from a doctor.

Dr. A. K. HENRY said that in appendix cases it was generally found that the first pain complained of was pain round the umbilicus. Pain was felt here before it was felt in the right iliac fossa, and if this was not so it was very likely that at operation appendicitis would not be found at all. He had seen cases in which the appendix almost formed part of the wall of either the caecum or the colon.

Sir WILLIAM SMYLY said that dysmenorrhoea was a form of pain which gynaecologists came across almost more than any other. Regarding the difficulty of diagnosis between appendicitis and inflammatory disease of the right tube, he had often found both present together; sometimes the origin of the disease was in one and sometimes in the other. In some cases a little blood in the peritoneum caused great pain, but in others it caused no pain at all. Matthews Duncan had said that retroversions which caused no symptoms required no treatment, and he divided retroversions into those with descent and those without. Sir William Smyly thought there was much less pain at the menstrual period nowadays than formerly, and this was probably accounted for by the fact that girls now led a more healthy life.

ENCEPHALITIS LETHARGICA.

AT a meeting of the Medical Society of London on November 10th, Dr. E. M. CALLENDER (the President) occupying the chair, a discussion on encephalitis lethargica was opened by Dr. E. FARQUHAR BUZZARD. Dr. Buzzard's paper is printed in full at page 937.

Professor A. J. HALL gave an account of the epidemic of this disease during the present year as it was encountered in Sheffield and the surrounding district. Up to October there had been notified in the city itself 320 cases of encephalitis, and the notifications in the near neighbourhood would bring that figure up to about 500. During the winter 1923-24 there had been one or two sporadic cases, and the storm burst with great fury about the second week of March. Many of the cases were very acute, and during April the fatalities were very high; the cases were chiefly of the restless, choreiform type. Taken on the whole, however, the mortality for the district had been surprisingly low—namely, about 10 per cent.—in contrast to 20 per cent. for the country generally. A great variation in type was noticeable, and many cases of abdominal myoclonus were seen, some of them so pronounced as to be admitted under a surgeon at hospital as abdominal emergencies. He discussed in some detail cases of polypnoea, and showed tracings of the breathing during attacks. He suggested that all cases showing this symptom should be notified. Hiccup was often a severe symptom.

Professor J. MCINTOSH discussed the etiology of the disease. Originally it was regarded as some form of cerebral poliomyelitis, while a few considered it an aberrant form of influenza. A good deal of animal inoculation had been done, but the monkey proved not to be a susceptible animal, although in one or two instances the disease had been communicated to it. Rabbits were easy subjects. It was shown that filtrates from the emulsions of infected brains were able to pass the Berkefeld filter and cause the disease in the inoculated animal. He was convinced that this disease was a distinct entity, and that it differed from all other neurotrophic diseases. He gave his reasons for separating it from herpes febrilis and from the spontaneous encephalitis of rabbits. He also urged a continuance of experimental researches to settle a number of points which were not yet very definite.

Dr. SALUSBURY MACNALTY spoke on the epidemiological side of the subject, and referred first to the outbreak in London in the spring of 1918, when 55 persons were known to have had the disease. It was made compulsorily notifiable in this country in January, 1919, and early in that year there was a recrudescence, 41 cases being notified in one week early in February. The epidemic of this year was first localized in Lancashire. The total number of cases notified in England and Wales in 1924 (to October 25th) was 4,605, as against 1,025 in 1923 and 454 in 1922. The only method of spread seemed to be from case to case.

and not by the intervention of flies or any biting insects, nor by contamination of food or water.

The PRESIDENT, in throwing open the meeting to general discussion, mentioned that, reflecting on the symptoms found in several patients in 1888, he was led to believe that they must have had this disease, and probably afterwards became ambulatory cases.

Dr. A. W. M. ELLIS spoke of finding in the urine in cases of this disease a very largely increased quantity of ammonia and practically an absence of phosphoric acid. In addition there was some albumose, showing intestinal and probably liver involvement.

Dr. C. P. SYMONDS spoke of the presence of the Argyll Robertson pupil in a number of these cases. With regard to the distressing insomnia in many of the subjects of the disease, he questioned whether it was wise to attempt, by regimen and hypnotics, to restore the normal rhythm in these patients. His experience was that this was regained naturally in time.

Sir WILLIAM WILLCOX thought that many cases of the disease escaped recognition because of the slightness of the symptoms, which were not carefully watched for. In most cases there was a quick pulse, but in one case—a boy—it was only 50 per minute. He inquired as to the significance of paralysis of accommodation in these patients, and whether Dr. Farquhar Buzzard's experience agreed with his own that the prognosis was definitely worse in people over 55 or 60 years of age.

Dr. FARQUHAR BUZZARD, in reply, paid a tribute to the work done on the subject by Professor Hall in Sheffield. In a public school where there was a small epidemic of mild cases four form-masters had such severe and continuous hiccup that they had to absent themselves from school until it subsided. When the pulse was abnormally slow the patient had usually reached a considerable degree of lethargy, probably on account of increased intracranial pressure. Paralysis of accommodation and difficulty of convergence were very common in the disease. He agreed with Sir William Willcox in regard to prognosis in older patients. The gastro-intestinal symptoms present in some cases seemed to indicate that this might prove one route for the virus to the central nervous system. He doubted whether treatment directed to the insomnia had much influence in altering the rhythm. With greater experience the profession, he thought, would recognize cases more readily, and there was thus hope for a steady decrease of the disease.

"THE MEDICAL WITNESS."

AT a meeting of the Hunterian Society, held at the Cutlers' Hall in the City of London, on November 17th, a discussion, to which some eminent lawyers contributed, took place on the subject of "The medical witness." Mr. H. W. CARSON occupied the chair.

Sir THOMAS HORRIDGE, speaking as one of His Majesty's judges, said that it would be difficult to exaggerate the importance of the medical witness. In criminal trials, from the simplest assault up to murder, the medical witness had not only to testify to the facts of the case, but frequently to give an opinion as to the criminal's responsibility. In will disputes the case often turned upon the evidence of the doctor. In nullity suits, again, the evidence given by the doctor was of first importance. In workmen's compensation cases the medical referee might himself be said to take part in adjudication, and in a vast number of civil cases medical witnesses were called on one side or the other. In preparing his evidence the medical witness should be careful to notice every minute fact, even if it appeared at the time unimportant. He emphasized the danger of approaching a case with a preconceived idea and determining whether the facts of the case fitted in with the theory; the proper way was first to discover the facts and then form an opinion. Even after the opinion was formed, the mind of the witness should remain open, so that the opinion might be remoulded in consequence of other facts elicited in the course of the hearing. In the witness-box the medical witness should be on guard against the double question. It was the habit of counsel to put to witnesses a double question with the object of eliciting a simple affirmative or negative as the case might be, and subsequently to use the answer as applying to that part of the question which suited counsel best. If a witness could give a direct answer he should do so; any judge would allow him to qualify it afterwards. He would also warn witnesses against being lured into answering questions about circumstances of which they knew nothing or matters which they had not considered. The witness should also use, as far as possible, ordinary non-technical language. If technical terms were used, judge or counsel had generally to explain their meaning to the jury. It was better to say that a man was badly bruised than to say that he was suffering from ecchymosis.

Finally, Mr. Justice Horridge said a few words on the subject of professional privilege. This had been granted to solicitors only because it was necessary for the administration of justice that there should be absolute confidence between parties and their legal advisers. Even here the privilege was not unlimited, and in a case of criminal conspiracy professional communications had to be disclosed. Privilege was also allowed as between husbands and wives, although in recent years various Acts of Parliament had made husbands and wives eligible witnesses against one another. On what ground was privilege claimed for the medical profession? He could see no ground except that of confidential relationship, and here where was the line to be drawn? If the doctor was to be privileged, why not the nurse, or the chemist who made up the prescription? Was the privilege to be extended to faith-healers and bone-setters and others who equally had confidential relations with their clients? Two Acts of Parliament—those dealing with the notification of diseases and the notification of births—compelled the doctor to reveal publicly matters which had come to him in his professional capacity, and he believed these Acts were passed with the support of the profession. The evidence of doctors was required in order to assist the administration of justice, and he thought that doctors must know in their conscience that they had no claim to privilege, although they had a claim to protection, which was accorded them.

Sir WILLIAM WILLCOX repeated some of the advice to witnesses which Mr. Justice Horridge had already given. In preparing his evidence the medical man should note and record everything that might have a medico-legal bearing. The trial itself might prove to hinge upon a detail at first considered trifling. The medical expert witness should not be *ex parte*, and he should be free from bias; this was of supreme importance in criminal cases. He should refresh his memory by careful study of scientific literature, and if necessary should conduct scientific investigations to elucidate difficult points. He should put himself in the position of cross-examining counsel and judge. In a written report he should give his opinion and the reasons for it concisely, and the opinion expressed in such a report should be unalterable: no doubtful expression should be put down there. In the witness-box a direct answer should be given whenever possible, and when not possible the reason should be clearly stated. Evasions created a bad impression, and lengthy explanations were apt to weaken the evidence. If a compound question were asked, the witness would be well advised to ask that it might be divided and put in sections. If a book were cited the witness should ask to be provided with a copy, and often, if this were done, it would be found that cross-examining counsel had taken an isolated passage to support his case, whereas the main argument of the book supported the contention of the witness. The expert witness, unlike the common witness, should remain in court during the whole of the proceedings; this, indeed, was legally allowed, if not legally required.

Sir FRANCIS NEWBOLT, K.C., said that his own experiences with expert witnesses had been chiefly along another—a non-medical—line, but such experience as he had had of medical witnesses had caused him to admire their fundamental honesty. There was not usually among them that wide divergence frequently found in expert testimony of another class, which indicated something beyond a mere difference of opinion. He could assure medical witnesses that if they knew their book and were not afraid, they could not be put down nor shaken in cross-examination. It was well for

them to bear in mind that they must appeal to the common sense of the tribunal; and he thought it would be a good plan for them, in order to avoid bias, to imagine themselves as appearing for both sides in an action.

Sir BERNARD SPILSBURY remarked that to those in court the responsibility upon a medical witness, whose word might decide the fate of an individual, must appear overwhelming, but he was not sure that the medical witness, even in a great criminal trial, felt quite the same himself. Speaking on his own behalf, in his character of witness he was always impersonal. He was not necessarily giving evidence against the prisoner in the dock, but against the person who committed the crime, and the identity of that person with the prisoner had to be proved by other means. He went on to describe the care with which a medical witness should pursue his *post-mortem* or other investigations. It was often forgotten that an expert had not merely to collect his facts, but to analyse and interpret them. In almost all criminal cases it was essential that naked-eye observation of a dead body should be supplemented by the microscope, and he felt strongly that a pathologist or other skilled expert assistance should be available almost invariably for the general practitioner. Before the medical witness gave his evidence in the first court—the coroner's court—he should have time and opportunity to weigh the facts he had elicited and compare them with facts in similar cases, consulting textbooks and other authorities as required. The textbook, however, should only be supplementary, for many of the cases referred to in textbooks were based on evidence of somewhat doubtful value, and in any event the cases were decided at a time when medical knowledge had not made its recent advances.

Dr. EDWIN SMITH, from his experience of the coroner's court, added his testimony to the usefulness of the medical witness, and said that in some cases it became the duty of the coroner to protect the medical witness from censure by the jury. One jury actually censured a medical witness because he had refused to attend another person who happened to be in the house at the time he was attending the deceased person. What was more, the witness meekly accepted the censure, and the coroner failed to intervene and protect the witness.

Mr. FREKE PALMER added a few words from the point of view of a solicitor practising in the police courts. The medical witnesses with whom he had largely to do were police surgeons, and he was inclined to complain that a good many of them did not give a long enough examination to persons accused of drunkenness, and in particular that they did not examine such persons for illness.

Dr. P. B. SPURGIN, as a police divisional surgeon, gave an account of the methods of examination he followed in the case of persons accused of drunkenness. He also described the difficulties of the police surgeon in certain other cases, such as alleged indecent assaults, where as a rule there was no corroborative evidence. He wished to make it plain that the police surgeon was retained, not on behalf of the police, but on behalf of the public. The police surgeons worked with the police, but their evidence had to be, as the evidence of all medical men should be, entirely unbiased.

A MEETING of the Royal Medico-Chirurgical Society of Glasgow was held on November 7th, when a lecture, including a lantern demonstration, was given by Professor JOHN H. TEACHER, M.D., on the implantation of the human ovum and the early development of the placenta. The demonstration consisted of (*a*) lantern slides of a new ovum (Teacher-Bryce No. 2), (*b*) new slides of the original Teacher-Bryce ovum, (*c*) slides illustrating the comparative embryology of the early stages, (*d*) theoretical scheme of human implantation. Pictures by Mr. A. K. Maxwell of both ova and of sections of the ovum —Teacher-Bryce No. 2—were also shown. The material has been published in detail in the *Journal of Obstetrics and Gynaecology of the British Empire*, vol. 31, No. 2, July, 1924. The principal points dealt with were: (1) The closure of the decidua capsularis by union of the uterine epithelium with a structure composed of the ectoderm of the ovum. To this the name "operculum" (German *Verschluss*) has been given. (2) The relations between the maternal blood vessels and the ovum in the earliest stages. (3) Theoretical considerations related to the nutrition of the ovum prior to implantation and the process of implantation itself.

Reviews.

PEDIATRICS.

DR. G. F. STILL'S *Common Disorders and Diseases of Childhood*, which first appeared in 1909, now gives fresh evidence of its vitality by the appearance of a fourth edition.[1] In successive editions new chapters have been added, but the general character and plan of the book have remained the same. The title is a true description of the contents. It is not a systematic and complete textbook of the diseases of early life: its fifty-nine chapters deal with all the common and a few uncommon disorders of infants and young children, and deal with them largely from the individual experience of the author. That personal experience is indeed supplemented by the views and observations of others, but the principal merit of the book is that it is the expression of Dr. Still's mind on common or perplexing questions of daily practice. His discussions are frequently illustrated by synopses of his own cases and by valuable series of statistics prepared from his hospital and private records. There are many, perhaps too many, elaborate and complete treatises on diseases of children. These systems or encyclopaedias—vast aggregations of chemical, physiological, and clinical data—have their value as works of reference. They can hardly be called books, but rather huge, well arranged scrap-books, which are consulted but seldom read and digested. Dr. Still's book is a genuine book, the product of his mind and experience: its scope is designed to cover all the ordinary difficulties and problems of the practitioner, especially the difficulties of diagnosis and the practical details of treatment. The call for a new edition shows that the book is still serving the needs of the time; and, being made of the stuff of experience, it may well endure to a later age. Survival in medical literature is as precarious as in any other kind of writing; but in the meanwhile we welcome the present edition as a characteristic and valuable example of British medical literature. We should add that the book is furnished with a number of excellent illustrations.

The little book on natural feeding of the child[2] is the last of a series on food and hygiene by Dr. MONTENNIS of Nice. The author has been a lifelong advocate of simpler and more natural habits in eating, and in this volume he deals with the diet of the infant and the child. He begins with the infant, when the exclusive diet of milk is giving place to a more varied diet, making a broad division into an early period ending with the completion of the first dentition, and a second period of childhood subsequent to this. The book is written in an ardent missionary spirit, and especially commends the use of bread made from 85 per cent. flour, the liberal use of well boiled cereals, of ripe and cooked fruits, and of vegetables. And this vigorous propaganda is accompanied by numerous recipes, so that the book is intended for the French housewife in her kitchen as well as for medical men.

Examination of Children,[3] by Dr. A. LEVINSON, deals largely with laboratory and to a less extent with clinical methods of examination. The book is an expansion of a course of lectures given at the Northwestern University Medical School, Chicago. After instruction in obtaining a case-history and in the ordinary physical examination of the child in bed, a descriptive list of instruments, utensils, and chemical agents is given; and the remainder of the book is devoted to the method and technique of their employment, with brief remarks upon their interpretation. There are a number of illustrations of instruments, apparatus, and of various clinical procedures; on the whole these are disappointing. The descriptions of many bacteriological methods are too curtailed to be of service. With regard

[1] *Common Disorders and Diseases of Childhood.* By George Frederick Still, M.A., M.D.Cantab., F.R.C.P.Lond. Fourth edition. Oxford Medical Publications. London: Humphrey Milford, Oxford University Press. 1924. (Demy 8vo, pp. xvi + 965; 73 figures. 25s. net.)

[2] *L'Alimentation Naturelle chez l'Enfant.* Par Dr. Montennis. Paris: A. Maloine et Fils; Brussels: A. Dewit. 1923. (Fcap. 8vo, pp. 278. Fr. 8.)

[3] *Examination of Children by Clinical and Laboratory Methods.* By Abraham Levinson, B.S., M.D. London: Henry Kimpton. 1924. (Sup. roy. 8vo, pp. 146; 74 figures. 18s. net.)

to tubercle bacilli in sputum, nothing more is said than that "only rarely does one find tubercle bacilli in children's sputum." Of the Binet-Semon intelligence test, it is said that "it is probably the best mentality test available," and the reader is given no account of what it is or how to apply it. The author's opinions of basal metabolism are given in six lines, and again neither a definition nor the technique is touched upon.

Professor BENDIX's book[4] on pediatrics is one that has secured a place in current German literature and has now reached its eighth edition. It deals with the subject in the ordinary systematic way. After an introduction dealing briefly with the physiology and hygiene of the healthy child, it proceeds in the usual order with the diseases of the newborn, with general diseases, digestive disorders, diseases of respiration, and so on. A complete survey of subjects is given, although none are treated exhaustively, and some very briefly. It is naturally written for German readers, and references to English literature are conspicuously absent. Thus in the account of rickets the venerable and famous name of Glisson is not mentioned; and though infantile scurvy is repeatedly called Barlow's disease, no reference is given to Barlow's classical paper. The account of nervous diseases is fuller than is usual in German textbooks of diseases of children. The book as a whole is a reliable but not very interesting guide to the subject; it no doubt deserves the success it has obtained in Germany, and it has been translated into Italian, Russian, and Spanish.

ESSENTIALS OF ORAL SURGERY.

THAT oral surgery is a recognized specialty in the United States of America, and that it merits recognition, is well shown by the volume on *Essentials of Oral Surgery*,[5] written jointly by Professor V. P. BLAIR of Washington University and Professor R. H. IVY of the University of Pennsylvania. Their object has been to embody in a book the subject matter taught to their undergraduate students. They have therefore omitted details of all major surgical operations, while paying great attention to the recognition of surgical conditions of the mouth and jaws.

"The dentist should understand the pathology and be competent in diagnosis of surgical lesions located in his field, but without special training is not called upon to perform major surgical operations in this region. At the same time there are many less serious surgical procedures which come directly within the scope of the dentist, and these receive more detailed attention in this book."

In the main the authors have restrained themselves within these limits, and where they appear to have transgressed, as in the pages dealing with the surgical treatment of deformities of the jaws, the specialized and interesting nature of the subject makes ample excuse.

The first eight chapters are occupied by a description of the anatomy of the mouth, and of the essentials of general surgical pathology and technique. The anatomical details are excellent, but it reads rather curiously to English eyes to find a sort of synopsis of the possible surgical lesions incorporated in the description of each part. Pathology and technique are dealt with in such a way as to bring out prominently the important points in diagnosis and infection as applied to daily practice. We should have liked, however, more details than are given in the dozen lines devoted to subacute and chronic inflammation. The remainder of the book is devoted to surgical conditions, and the wide range of subjects it includes bespeaks a clinical experience of perhaps unique character; and it is experience of which the authors have made good use. Dentists will be interested to note that the authors speak with restraint as to the value of root-resection. In the clinic at the University of Pennsylvania about fifty root-resections are performed each year, but the authors have found it impossible to follow up the cases, and can only conclude that the procedure offers a chance of success in certain cases. Pyorrhoea, under the name "chronic suppurative pericementitis," is dealt with in a few pages. Such statements as "gingivitis caused by serumal calculus or injury is the most frequent forerunner," and "in any case there is sufficient inflammation of the gingivae to permit a pyogenic infection," seem to show that the authors take little account of "sepsis" as the *fons et origo* of pyorrhoea, and it may be noted here that there is no mention of "septic" infection as a cause of leucoplakia. Both dentists and oral specialists will probably find their greatest interest in the pages devoted to the surgical treatment of deformities of the lower jaw. The authors have treated both retracted and protruded mandibles by surgical means, and, judging by their illustrations, with no small success. The operation described for retracted mandible would seem necessarily to involve section of both inferior dental artery and nerve by the Gigli wire saw, but no mention is made of ill results.

The book is well written, but there are a few lapses, as on page 439, where the reader is warned that certain tumours "should not be incised with impunity." The illustrations are generally good and well chosen, but we have to confess to being unable to decipher some of the *x*-ray figures—for example, that on page 402.

This volume will be a valuable addition to all medical and dental libraries, and the authors are to be congratulated on the results of their labours.

MODERN MEDICAL MONOGRAPHS.

A SERIES of books is being edited by Dr. HUGH MACLEAN, entitled "Modern Medical Monographs." Each book concerns itself with a different branch of medical science and is written to provide the general practitioner with a short account of the modern point of view. In his general introduction to the series Dr. MacLean explains how the change from empirical to more scientific medicine must naturally be accompanied by changes in our conception of various diseases and their treatment. To keep abreast with these changes is a strenuous exercise even for the specialist; for the general practitioner and medical man of other specialties the task is impossible, and they must be content to receive information sifted and epitomized. From books such as those of this series medical practitioners requiring enlightenment on one particular subject will be able to obtain it without a long search.

The first of the series is by Lieut.-Colonel L. W. HARRISON, and entitled *Modern Diagnosis and Treatment of Syphilis, Chancroid, and Gonorrhoea*.[6] This is a handy volume of some 160 pages, written by an admitted authority on venereal disease. It deals with the clinical diagnosis, prevention, and treatment of syphilis, including a useful chapter on the general management of syphilis; the general principles of treatment of gonorrhoea are clearly presented and modern methods of treatment lucidly described.

The second of the series, *Modern Views on the Toxaemias of Pregnancy*,[7] has been written by Drs. O. L. V. DE WESSELOW and J. M. WYATT. Concerning the subject of the toxaemias of pregnancy the medical profession waits expectantly for further knowledge, for there are few pathological states of which we are more ignorant. Hyperemesis gravidarum, eclampsia, and nephritic toxaemia are constantly recurring problems to the practitioner. A clear-cut statement of the pathology of the toxaemias of pregnancy is impossible at present, but the authors have succeeded in collecting together and presenting in a readable form the more important facts gained from recent scientific research, and this book will certainly afford some guidance in the management of difficult cases.

The third of the series, *Modern Methods in the Diagnosis and Treatment of Pulmonary Tuberculosis*,[8] by

[4] *Lehrbuch der Kinderheilkunde.* Von Dr. Med. Bernhard Bendix. Achte umgearbeitete und verbesserte Auflage. Berlin and Vienna: Urban and Schwarzenberg. 1923. (Sup. roy. 8vo, pp. 639; 93 figures, 7 plates. Unbound, 20.65; bound, 24.40 Swiss francs.)

[5] *Essentials of Oral Surgery.* By Vilray Papin Blair, A.M., M.D., F.A.C.S., and Robert Henry Ivy, M.D., D.D.S., F.A.C.S. London: Henry Kimpton. 1923. (Med. 8vo, pp. 526; 335 figures. 32s. net.)

[6] *Modern Diagnosis and Treatment of Syphilis, Chancroid, and Gonorrhoea.* By L. W. Harrison, D.S.O., M.B., Ch.B., M.R.C.P.E., Brevet-Colonel R.A.M.C., and K.H.P.(Ret.). (Demy 8vo, pp. viii + 167; 7 figures, 1 plate. 10s. 6d. net.)

[7] *Modern Views on the Toxaemias of Pregnancy.* By O. L. V. de Wesselow, M.B.Oxon., F.R.C.P., and J. M. Wyatt, M.B.Lond., F.R.C.P. (Demy 8vo, pp. vii + 99. 7s. 6d. net.)

[8] *Modern Methods in the Diagnosis and Treatment of Pulmonary Tuberculosis.* By R. C. Wingfield, M.B., M.R.C.P. Modern Medical Monographs, edited by Hugh MacLean, M.D., D.Sc. London: Constable and Co., Ltd. 1924. (Demy 8vo, pp. xi + 134; 27 figures. 10s. 6d. net.)

Dr. R. C. WINGFIELD, is specifically dedicated to the general practitioner and senior student; tuberculosis specialists being warned that herein they will find nothing new, and the junior student that, though the book is simple, it is better that he should postpone reading it until he has completed the groundwork of his medical education. The greater part of the book is devoted to the treatment of pulmonary tuberculosis—general, sanatorium, and specific. One of the modern methods of treatment—namely, exposure to sunlight (as expounded by Dr. Rollier)—might have received rather more notice in a book of this sort. This useful little book is illustrated with some good *x*-ray photographs.

CARBOHYDRATES AND GLUCOSIDES.

A GREAT service has been done to readers of biochemistry in the series of monographs produced under the editorship of Professor Plimmer and Professor Hopkins. Each monograph deals with a distinct subject of the study. That entitled *The Carbohydrates and the Glucosides*, written by Dr. E. F. ARMSTRONG, is now presented as a fourth edition.[9] Hardly any section of chemistry has been the subject of so much research with so little progress as the sugars. Now at length the extensive work of Fischer, followed by that of Irvine and others, has led to the realization of a substantial knowledge of structural constitution among the carbohydrates. In this realm of chemistry the influence of molecular structure presents an attractive subject of study. There appears to be a promise of clearer information on the relation of carbohydrates to enzymes. It is even suggested that the newly recognized molecular form of glucose termed the "gamma" oxide may be of critical importance in relation to diabetes. Dr. Armstrong's monograph affords an excellent survey of the subject. The facts are brought into orderly arrangement. The author shows how the members of the group termed carbohydrates are related to each other. He describes the chemical transformations of which they are susceptible and the products of the reactions into which they enter. He also gives a very full bibliography for the benefit of those directly interested in research on the subject. What is presented in this volume would cost the reader an extravagant amount of time to gather for himself through the published researches.

AMERICAN HOSPITAL POLICY.

MACMILLANS of New York are publishing a series of volumes under the general title "Modern Hospital Library." Of these two volumes have come to hand. One is entitled *First Steps in Organizing a Hospital*,[10] which is written by Mr. JOSEPH J. WEBER. The work deals with the status of the hospital to-day, the hospital needs of the community, the best method of getting a hospital organization into being, the duties and responsibilities of the trustees in the preliminary organization of the hospital, and the financing of the new hospital construction. Great stress is laid upon the necessity of proper survey of the needs of the community before new hospitals are built. There must be a thorough consideration of all the factors involved, including not only present necessities but also future demands, and there is the pertinent question, "Do the needs of the community warrant the establishment of an out-patient department?" The second volume, *Hospital Organization and Operation*,[11] is written by Mr. FRANK E. CHAPMAN. This is a very close review of the whole of the internal work of a hospital. The principles of organization are considered, the administration, the medical staff, special diagnostic and therapeutic services, nursing, dietary, social service, purchase of stores and their issue, housekeeping, repairs and maintenance, laundry, the out-patient department, and the relation of these ideals and principles to the operation of the small hospital. The author in some parts of the work enters into rather too much detail, and there is a danger that such works may tend to stereotype internal administration too much; but the book is one that should be read by every medical superintendent and by those who are responsible for the administration of hospitals, for it is full of good ideas and information. There are many illustrations and charts indicative of the methods of record of hospital case notes. Both books are well got up, and bound in a clever imitation of leather.

[9] *The Carbohydrates and the Glucosides.* By E. Frankland Armstrong, D.Sc., Ph.D., F.R.S., F.I.C. Fourth edition. Monographs on Biochemistry. London: Longmans, Green and Co. 1924. (Med. 8vo, pp. xi+287. 16s. net.)

[10] *First Steps in Organizing a Hospital.* By Joseph J. Weber, M.A. Modern Hospital Library. New York and London: The Macmillan Company. 1924. (Demy 8vo, pp. xii + 205. 13s. net.)

[11] *Hospital Organization and Operation.* By Frank E. Chapman. Modern Hospital Library. New York and London: The Macmillan Company. 1924. (Demy 8vo, pp. xv + 270; 70 figures. 18s. net.)

NOTES ON BOOKS.

THE short guide to First Aid,[12] by G. FORNI, is an excellent example of what such a work should be. In his preface the author warns his readers not to expect first aid to be easy and pleasant, and urges them to read and re-read his little guide over and over again. At the same time he disclaims all pretensions to popularize medical and scientific knowledge. The advice which he constantly gives in cases for which first aid is a measure of temporary and urgent relief is to send for the doctor without delay. The text of the book is clear and the illustrations admirable, especially those of bandaging, applications of improvised splints, and methods of carrying the injured. There is a useful index.

Two American physicians have been at much pains to produce a series of graduated exercises useful for patients in different conditions of convalescence and health. They point out very rightly that there have been many publications dealing with physical exercises, but that most of them have been written to exploit some cult or system, and are too often filled with incorrect or misleading statements, or they are compiled by inexperienced persons and are merely a jumble of exercises with no definite object; some, on the other hand, are carefully written textbooks by some well known authority, but too complex and technical for the ordinary reader. Drs. DICKSON and DIVELEY, in their little work, *Exercise for Health and Correction*,[13] have sought to produce a series of graded exercises—first for the convalescent who is still abed, and for this one there are a series of thirteen exercises, most of them quite simple and distinctly valuable, although the last of the series we are inclined to think somewhat too strenuous for a convalescent; then there follow a series of ten "setting-up" exercises; and, finally, an extensive range of postural exercises which are suitable for all healthy persons. The book is well planned; each exercise is set out plainly on one page, and facing the print is a reproduction of a photograph of the exercise being performed. The photographs of the men are good, those of the women are ugly.

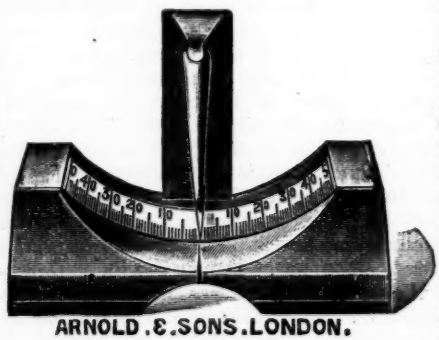
[12] *Breve Guida ai primi soccorsi.* By G. Forni. Bologna: L. Cappelli. 1921. (Pott 8vo, pp. 95; 59 figures. L.3.)

[13] *Exercise for Health and Correction.* By Frank D. Dickson, M.D., and Rex L. Diveley, M.D. London: J. B. Lippincott Company. 1924. (Post 8vo, pp. 127; 112 illustrations. 8s. 6d. net.)

MEDICAL AND SURGICAL APPLIANCES.

An Apparatus for Estimating the Degree of Rotation in the Spinal Column.

DR. EDGAR F. CYRIAX writes: Although many forms of apparatus have been made for estimating the degree of lateral curvature in the dorsal and lumbar regions of the spine, no satisfactory one has yet been produced for measuring the amount of malrotation. To meet this want I have designed a simple apparatus as depicted in the illustration, named the "spinal torsiometer." It measures about 4 in. by 2¾ in., and can therefore easily be carried in the pocket. It consists of an aluminium block, with a scale to record degrees; above this is suspended a fine needle which immediately registers the angle at which the block is lying. The subject to be examined is placed face downwards on a couch; a line is drawn with a dermograph through the tips of the spinous processes in the region desired, together with transverse lines to denote the middle of each such process. The torsiometer is placed transversely on the points of intersection of the line on successive vertebrae and the amount of rotation (if any) is read off. (If, instead, it be placed longitudinally over each point of intersection, the amount of antero-posterior curve can also be estimated.) The apparatus can be obtained from Messrs. Arnold and Sons (John Bell and Croyden Ltd.), Wigmore Street, W.1.



British Medical Journal.

SATURDAY, NOVEMBER 22ND, 1924.

MULE-SPINNERS' CANCER.

It is difficult to realize that only two years ago the term "mule-spinners' cancer" was unknown, seeing that at the present time it is almost as familiar to us as chimney-sweeps' cancer, and yet very little has been written about it. In a communication by Southam and Wilson, which we published on November 18th, 1922, attention was directed for the first time to the occurrence of epithelioma of the scrotum amongst the mule-spinners of South Lancashire, and the suggestion was put forward that this form of cancer was the result of the soiling of the clothes in the neighbourhood of the scrotum by lubricating oil from certain parts of the cotton-spinning machinery. The action of this oil on the scrotal skin prolonged over many years brought about epitheliomatous formation. The clinical observation came at a very opportune time, for, mainly owing to the successful activities of the leaders of cancer research, the importance of chronic irritation in the production of neoplasms was occupying the minds of the medical profession. A few months previously, at the Annual Meeting of the British Medical Association held at Glasgow, Leitch had reported the experimental production in mice of malignant tumours—sarcoma as well as epithelioma—by the prolonged use of paraffin oils distilled from Scottish shales (the paper was printed in full in our issue of December 9th, 1922), and thus had supplied a reasonable, if not entirely conclusive, basis for the suggestion of Southam and Wilson.

It was not long before mule-spinners' cancer and its supposed cause were being discussed by those engaged in the cotton industry and by the technical and trades journals, and investigated by the Government officials. In some quarters it was denied that scrotal cancer was more prevalent amongst spinners than in the general population: no comparative statistics were available, and the hospital records showing that mule-spinners had a preponderance of this cancer might have little significance in view of the fact that the clientele was drawn from a densely populated area where cotton manufacture was by far the chief industry. Others, while not denying this preponderance, refused to believe that spinners were more subjected to the action of mineral oils than many other classes of workmen, or that the lubricating oil had anything to do with the disease. It was even suggested that injuries sustained in playing football were more likely to be the cause of the cancer. Finally, there were some who, impressed by such clinical and experimental information as was then available, attributed the cancer to the action of shale oils, which were said to have been mixed with the petroleum oils. Whether such an admixture was used or not is not definitely known, for the composition of spindle oils is a trade secret. These discussions were evidence of the interest aroused in industrial circles, but the whole matter was taken out of the academic arena by the action of the principal trade union concerned, and a test case was brought before the courts. A workman, aged 40, who had been engaged in mule-spinning for many years, and had developed an epitheliomatous ulceration of the scrotum, sued his employers for compensation under the section of the Workmen's Compensation Act dealing with epitheliomatous cancer or ulceration of the skin due to tar, pitch, bitumen, mineral oil or paraffin, or any compound, product, or residue of any of these substances. The case came on for trial in the Ashton County Court in January of this year, and expert evidence was cited on both sides. Judgement was deferred.

At page 941 will be found the paper on mule-spinners' cancer read by Dr. Archibald Leitch at the Annual Meeting of the British Medical Association held at Bradford in July last. In it he discloses, from unpublished figures of the Registrar-General to which he had had access, the surprising fact that 20 per cent. or more of all the fatal cases of cancer of the scrotum occur amongst cotton-spinners engaged in mule-spinning processes, and he calculates that 1 in 2,000 die of the disease. The liability, he shows, is less than amongst chimney-sweeps, although the total numbers are higher. Continuing his previous experiments on mineral oils of the shale group, he states that even refined oils of this class possess the carcinogenic property, that certain crude petroleum oils are capable of inducing cancer, and that with a lubricating oil of the latter group he succeeded in producing malignant tumours. The facts that he puts forward seem to leave little room for doubt that mule-spinners are peculiarly liable to cancer of the scrotum, and that it is caused by prolonged exposure to lubricating oil. We understand that this evidence was not available in the law case to which we have referred, and naturally could not have influenced the decision which was given on July 26th by Judge Mossop. In his written judgement, the learned judge found that the claimant had contracted cancer of the scrotum, which declared itself when he was in the employment of the cotton-mill, and that in the course of his work he was brought into contact with the faller shaft, which caused constant friction in the neighbourhood of the scrotum; further, his overalls, especially in that region, were frequently soiled with mineral oil, which mineral oil was an irritant; and it had been shown that cancer of the scrotum was common amongst mule-spinners. "The conclusion is irresistible that there is a connexion between the disease and the employment." The compensation claimed was awarded. An appeal against this decision was entered, but was subsequently withdrawn, the Employers' Federation accepting the ruling. It was announced by the workers' union, the Amalgamated Association of Operative Cotton Spinners, that they had a hundred cases on their books which would be affected by the decision. It is a mystery why mule-spinners' cancer should have remained so long unrecognized. It is said that the condition was apt to be concealed by the workmen, as they feared that it would be diagnosed as syphilis and they would lose benefit.

It is of interest to quote the following words from the quarterly report of the secretary of the trade union, Mr. H. Boothman: "The resources of science and the great amount of research that is now being undertaken in various directions could, we suggest, find no worthier field in which to work than in the task of banishing the disease from all connexion with cotton-spinning. The trade itself, in conjunction with the medical profession, might investigate the cancer-producing properties of mineral oil, and direct their efforts to the production of an oil innocent of such properties, or at least in the provision or improvement of preventive measures." It will be seen that Dr. Leitch's independent investigations at the Cancer

Hospital Research Institute, London, have anticipated some of these suggestions. There seems to be no reason why this form of cancer should not be entirely prevented, and probably a commission or committee composed of representatives of employers and workmen, together with technical experts and cancer investigators, would soon find effective means.

THE PASSAGE OF FOOD THROUGH THE BOWEL.

Our opinions as to the time occupied by food in passing through the bowel are based chiefly on the results of *x*-ray examinations of individuals who have eaten some opaque substance such as bismuth, or on the time taken for some distinctive and easily recognizable foreign material, such as charcoal, to appear in the faeces. From such studies it has been concluded that food reaches the caecum in four to five hours; in another four to five hours it has arrived at the splenic flexure; some sixteen hours are spent in the journey thence to the sigmoid flexure, through which the food is said to pass in about six hours. The periods of time naturally vary under different conditions, but in general it is assumed that food taken by the mouth is completely evacuated through the anus in from twenty-four to forty-eight hours. But it may be argued against the evidence deduced from this type of experiment that it does not reveal what happens with ordinary food, since the test substance used is often bulky and always foreign, and is therefore likely to act as an irritant and to be hastened in its course through the bowel. Apart from this aspect of the question, it should not be assumed that because the first elements of the test substance appear in the faeces in from twenty-four to forty-eight hours that therefore the whole mass is voided in this time.

Dr. W. C. Alvarez and Dr. B. L. Freedlander[1] have recently found evidence, from some well planned and convincing experiments, that this is not the case. They showed that patients after a barium meal continued to excrete barium in the faeces for many days, and that small glass beads, when taken with food, are often not all expelled for a week or more. Their experiments with barium were very simple. A number of healthy students were each given 60 grams of barium in milk, and the stools were collected daily for five days. Weighed portions were incinerated and tested for barium. It was found that from 40 to 80 per cent. of the barium was expelled in twenty-four to forty-eight hours, and that extrusion of the remainder was slow, lasting from four to five days. Thus we learn that even with a substance which probably passes through the bowel more rapidly than most food a considerable fraction remains within the alimentary tract for almost a week. Their experiments with glass beads formed the major part of their work. Fifty very small glass beads, about 2 mm. in diameter, enclosed in a gelatin capsule, were given to volunteers at either the morning or evening meal, and the stools of these subjects were collected in large-mouthed jars and brought to the laboratory each day for examination and the search for beads. It is said of these beads that, being chemically inert and mixing intimately with the food, they can have but little influence on intestinal motility, certainly no more than that of the many berry and fig seeds and bits of skin and fibre that are found so commonly in the stools. By giving different coloured beads on each of three successive days it was possible to make three rate determinations on each subject of the test. It may be mentioned that this appears to have been an extensive investigation. The exact number of experiments is not recorded, but the authors speak of it as having been carried on, with some interruptions, for more than ten years, and all the four participators acknowledge complete agreement.

Their conclusions, briefly, were as follows. They found that ordinarily only some 15 per cent. of the beads taken by the mouth could be found in the faeces on the first day, 40 per cent. on the second, 15 per cent. on the third, and 10 per cent. on the fourth day. Many days might elapse before all the beads were voided. Thus, in one instance, the stools of a constipated person were sieved carefully until all the beads were accounted for, and the last one was not recovered until the fortieth day. In some individuals the beads travelled more rapidly than in others, but it is instructive to note that a slow passage did not betray intestinal stasis, for no symptoms of disease were found in men and women who took a week or more to pass 70 per cent. of the beads. On the other hand, fast rates of passage, as indicated by the recovery of 85 per cent. of the beads within twenty-four hours, were associated with the passage of soft, badly digested stools.

We may conclude from such results as these that the colon normally retains food residues from meals taken during the preceding week or even earlier. Ordinarily about 80 per cent. of the residue from any one meal is extruded by the end of the fourth day: the remainder has a more protracted sojourn. Another lesson of considerable practical importance which seems to emerge from these investigations with the beads is that when the colon is well evacuated by a purge or through spontaneous defaecation no bowel movement should be expected or demanded the next day. The conclusion, therefore, is that to give purgatives when the bowel is empty, either as the result of antecedent evacuation or because very little food has been taken, is to delay the return to habitual bowel movements.

It was from a paper by T. R. Elliott and E. Barclay-Smith[2] that the authors gained the idea of studying the progress of food by means of glass beads. Twenty years ago Elliott and Barclay-Smith studied the distribution of food along the digestive tract by giving such beads to rabbits and then killing them at various periods. The paper in which their results were published was entitled "Antiperistalsis and other muscular activities of the colon"; it is a masterly survey of the physiology of movements of the colon. With the help of these physiological observations, and other knowledge which has been gained during the intervening years, it is not difficult to find a plausible explanation for the fact that a considerable fraction of the food residue of a meal is retained in the colon for several days. We know of three types of muscular movements in the colon—antiperistalsis, segmentation, and forward peristaltic movements. Antiperistalsis, which results in a reversal of the main direction of passage, occurs chiefly in the ascending colon, its effect being to mix up the contents of the ascending colon and bring them into intimate contact with the walls of the bowel. The periodic movements of segmentation result in division and redivision of the contents of the gut, and further favour mixing. The slow forward peristaltic movements carry the mixed intestinal contents on towards the rectum. We know that, forward from the hepatic flexure, the contents stiffen and became consolidated: in the elongated

[1] *Journ. of Amer. Med. Assoc.*, August 23rd, 1924, p. 576.

[2] *Journ. Physiol.*, 31, 293, 1904.

transverse, in the descending and iliac colon, churning movements are negligible, and the chief movement of these regions is a forward propulsive peristalsis. In the ascending colon and caecum the most intimate mixing takes place, and it is easy to understand how glass beads, and other residues, become churned up with the new material arriving regularly through the ileo-colic sphincter, and how in this general shuffling of position particles may fail to be moved on in the sequence which their seniority deserves. We venture to think that this explanation would be acceptable to Drs. Alvarez and Freedlander, who, though they do not debate this question in detail, give an inkling of their views by remarking, in picturesque language, that food residues, after leaving the ascending colon, "had gone the rest of the way to the anus like cars on a track."

These observations on the rate of progress of food residues through the bowel should provide material for reflection to exponents of the doctrines of intestinal stasis. They point also to rational moderation in the use of laxatives.

CELEBRATION OF THE SYDENHAM TERCENTENARY AT THE ROYAL COLLEGE OF PHYSICIANS.

On Wednesday evening, November 12th, a special meeting was held at the Royal College of Physicians of London to commemorate the tercentenary of the birth of Thomas Sydenham. A considerable number of Fellows, Members, and guests was gathered in the large library of the College, which had been arranged most tastefully for the accommodation of the visitors by the Treasurer, Dr. Sidney Phillips. Indeed, the beautiful proportions of the large library have never been seen to such advantage. The guests were received by the President, and at 9 o'clock he delivered an address dealing with the life and work of Thomas Sydenham. This address by Sir Humphry Rolleston, which has already appeared in the BRITISH MEDICAL JOURNAL (November 15th, p. 917), was admirable in point of style and delivery, and was a model of what such addresses should be on an occasion when the work of a great medical name in the past has to be commemorated and reviewed. To signalize the meeting various relics and other objects of interest connected with Sydenham were displayed for the inspection of the guests. The fine portrait of Sydenham painted from life by Mary Beale was in the Censors' Room, and two other contemporary portraits—one by Closterman belonging to the College, and the other by a painter unknown, lent by the Wellcome History Museum—were placed on easels at the end of the large library. On tables were displayed engraved portraits of many of Sydenham's friends and contemporaries, and engravings of the College house in Sydenham's time. The first editions of all his books were exhibited, and in some of them, on the title-page, was recorded the fact that it was given by the author. In the subscription book of Fellows the signature of Sydenham was exposed, and also the interesting document in the hand of Isaac Barrow, Vice-Chancellor, in which he certifies that Sydenham took his M.D. degree at Cambridge on May 18th, 1676. Sydenham's diploma from Cambridge as a doctor of medicine was also on view, and his very valuable note-book entitled "Medical Observations." This note-book of Sydenham does not form any complete medical work, but is a book in which he recorded various medical observations, and some of the passages in his various works can be traced to this source. It is, however, doubtful if the whole is in his own hand, though parts certainly were written by him. The success of the celebration was considerable; it was a fitting tribute to the great work of one of the most distinguished men on the roll of the Royal College of Physicians.

DIABETES, INSULIN, AND VITAMIN B.

INSULIN is no more than a means for treating diabetes. If the incidence of the disease, and therefore the mortality ultimately due to it, are to be diminished, more must be learnt about the causes which bring it about. The very multiplicity of suggestions is proof that we have no guiding principle. Heredity, traumatic and other lesions of the nervous system, emotional shock, anxiety, mental strain, racial susceptibility, over-consumption of starch and sugar, sedentary habits, the gouty diathesis, obesity, and infection are factors any or several of which may be concerned, but we have no positive knowledge. Since the discovery of insulin many investigators have concerned themselves with the problems of metabolism as well as of therapeutics which it has raised, but comparatively few with the factors which lead to the failure of the islands of Langerhans to discharge their functions efficiently. The time has come to concentrate more attention on this aspect of the diabetes problem, for, however potent insulin may be in treatment, it will not of itself suffice to arrest the increasing death rate. The mortality is said to be increasing in America, and its great incidence in certain parts of India suggests the operation of some widespread influence in its causation. Such an influence might well prove to be faulty diet. In this connexion we are reminded of the effects upon the pancreas of a rice diet—that is to say, of a diet excessively rich in carbohydrates, deficient in suitable protein, in certain mineral essentials, and in vitamins A and B. These faults are not peculiar to Indian diets, but are to be found in others in common use in this country and America. Such diets ultimately tend to atrophic changes in the pancreas, as was shown by McCarrison in our columns over five years ago.[1] More recently Ogata[2] has found that in birds fed on a rice diet the islands of Langerhans at first undergo hypertrophy, showing an increased demand for the products of these cells. The hypertrophy may be succeeded by atrophy if the diet be persisted in. The atrophy, it is believed, is due in great part to want of vitamin B; it is conspicuous, we are told, in the pancreas of hens which have been given "rice disease" (polyneuritis gallinarum) three times. This raises the question whether chronic lack of vitamin B may not ultimately cause diabetes. In Bengal McCay and his fellow workers have advanced good evidence for the opinion that the glycosuria so prevalent there among the leisured classes is due to the excessive ingestion of starch and sugar, combined with lack of exercise. Since the amount of vitamin B needed is proportional to the quantity of carbohydrate eaten, it would seem likely that chronic deficiency of vitamin B is also a factor of importance in the production of the disease. However this may be, further investigation of the causes which lead to failure in function of the islands of Langerhans is called for.

GOLD TREATMENT OF TUBERCULOSIS.

A SEMI-EDITORIAL notice in *Ugeskrift for Laeger* for November 6th gives an interesting account of the meetings on October 28th and 29th of the Medical Society in Copenhagen. The experimental work of Professor Moellgaard on cattle and other animals, and the clinical tests carried out in various tuberculosis institutions with "sanocrysin" (mentioned in our issue of November 8th, p. 870), have aroused great interest during the past year in Denmark. The Danish medical profession flocked to this meeting, not only from Copenhagen, but from all over the country, in such numbers that the "Domus Medica," in which the lectures were to have been held, was found far too small, and Professor Faber's lecture room in the Rigshospital had to be used. Even so, many of the audience had to remain standing for three to four hours at a time on both

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days. Professor Moellgaard gave an account of the special qualities of sanocrysin as a germicide *in vivo*. It is said to be non-toxic for the tissues, easily diffused through the body, slowly excreted from it, and very toxic to the tubercle bacillus. It is claimed that no reaction follows when it is introduced into the body by intravenous injection provided the tissues are healthy, but if they are tuberculous a violent reaction ensues, because (so it is supposed) the wholesale destruction of tubercle bacilli floods the body with their toxins. By giving a serum as an antidote to this reaction Professor Moellgaard believes he has succeeded in greatly reducing its violence. In support of his claims he gave an account of his treatment of animals accidentally or artificially infected with tuberculosis, and he reported two cases of tuberculous monkeys, emaciated and almost moribund, in which the lungs showed signs of extensive disease, and there was enlargement of the spleen, ascites, and ileo-caecal tuberculosis. Complete clinical recovery was effected, the monkeys became lively again, and their weight increased by 50 per cent. The clinicians who gave an account of their experiences with sanocrysin during the past year in hospital practice were Dr. Secher of the Bispebjaerg Hospital, Dr. Würtzen of the Öresunds Hospital, Professor Bie of the Blegdams Hospital, Professor Faber of the Rigshospital, Dr. Gravesen of Vejlefjord Sanatorium, Dr. Strandgaard of Boserup Sanatorium, and Dr. Permin of the Frederiksberg Hospital. It appeared from their reports that human beings as well as animals reacted to sanocrysin, after it had effected a clinical recovery, in the same manner as healthy animals which had never suffered from tuberculosis. Tragedies as well as brilliant successes were recorded, and the errors of dosage responsible for the former were discussed. The speakers who gave an account of their experiences with tuberculosis of the skin (Dr. Lomholt), tuberculosis of the iris (Dr. K. K. K. Lundsgaard), and surgical tuberculosis (Dr. Chievitz), were guarded in their attitude towards sanocrysin, but although Dr. Chievitz had not obtained any outstanding results from the intravenous injection of sanocrysin in surgical tuberculosis, he had obtained complete local healing of tuberculous teno-synovitis by exposing the tuberculous structures and infiltrating them with the drug. The speaker who was most reserved in his claims and most cautious in his forecasts of the efficacy of sanocrysin was Professor Moellgaard himself, and his attitude in this respect was the more appreciated since the experimental evidence he adduced was such as to tempt enthusiastic research workers to believe that *sterilisatio magna* had become something more than a mere possibility in tuberculosis. It is stated that some of the papers read on this occasion may soon be published in *Ugeskrift for Laeger*.

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Preventive medicine is a familiar term; preventive surgery possesses more novelty, but we may reckon as one part of it the prevention of deformity due to injury or disease. There is some justification for the claim made by Dr. C. J. Macalister in the new (second) number of the *Cripples' Journal*[1] that it may be dated from 1898, when Liverpool established its hospital for children at Heswall, on a fine site looking across the Dee to the mountains of North Wales, and Miss Hunt, with the assistance of Sir Robert Jones, started on a modest scale the home at Baschurch in Shropshire which has grown into so great an institution, and is the mother house of the large scheme now on foot for the benefit of cripples of all sorts. It is true that, as Mr. Muirhead Little recalls in the biography of his father, Dr. W. J. Little, which he contributes to the same issue, the treatment of congenital deformities, club-foot in particular, had been begun more than half a century earlier, but surgeons were hampered by the fear of sepsis, and the treatment of tuberculosis of bones and joints had hardly been begun. The plan of the larger scheme, to which we have referred on several previous occasions, is explained in the same issue of the *Cripples' Journal* by Mr. G. R. Girdlestone, surgeon to the Wingfield Hospital for Cripples, which is situated near Oxford. The general idea is to form areas to cover eventually the whole country; each area would have a central orthopaedic hospital with a clinic in every fair-sized market town, "held on market day, so that the carriers and omnibuses may bring in the cripples with the market folk." The clinic is conveniently held in the cottage hospital where there is one; if not, in some place supplied by local initiative; or, when the interest of the local authority has been enlisted, in a room lent by it perhaps at the town welfare centre. Usually the medical officer of health and the school medical officers are very ready to co-operate, and the scheme has only to be explained to them to secure the goodwill of the medical practitioners in the district. Here, then, we have the regimental medical officers, the collecting stations and field hospitals, and the base hospital. The place of the casualty clearing stations is taken by the general hospitals in the area. These form "nodal points in the system and centres of consultation and co-operation" between the surgeons of the central orthopaedic hospital, who visit the local hospital periodically, and their medical and surgical colleagues. Where such relations can be established they form "the best possible form of local orthopaedic clinic." The Wingfield Hospital has such relations with the general hospitals at Oxford, Reading, Aylesbury, and Windsor, each of which has a member of the staff of the Wingfield Orthopaedic Hospital working in its orthopaedic department. The analogy with the military organization made familiar during the war is only rough, but it may serve. Other things are wanted, such as seaside convalescent homes, especially for tuberculous cases, and the central orthopaedic hospital of the area had better be in the country. How many areas have taken up the scheme we are not told, but we have no doubt that it will everywhere enjoy the support both of the medical profession and of the public. It is being extended to Wales, and the Principality—as Sir John Lynn-Thomas points out in the same issue of the magazine from which we have quoted—starts with two advantages: the Welsh National Memorial Association, founded by Major David Davies, M.P., in memory of King Edward, undertakes to treat surgical tuberculosis; and the Prince of Wales's Hospital, established during the war in Cardiff by the writer of the article for the treatment of crippled soldiers, is now being made available for the civilian population. The demands upon it are so considerable that it is proposed to erect on a healthy site a subsidiary building affording another hundred cots, when provision can be made for the systematic education of the children in elementary knowledge. Sir W. de Courcy Wheeler, who has an article on the cripple in Ireland, sums up the general principle by which the promoters of the whole scheme are actuated in the following pithy sentences: "It is futile to have special surgical skill without proper country accommodation. It is more futile to have open-air homes for cripples without the special surgical and nursing skill which is essential to success."

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Hospital, the remainder by motor ambulance to their homes or elsewhere. Ambulance cars were at work day and night throughout the period of the exhibition, and the mileage covered by them amounted to 10,625. The Stadium casualties of various kinds numbered 850. A medical officer and first-aid attendants were on duty in the arena and at the special ambulance station during all ceremonies and performances. A portable *x*-ray apparatus was specially procured for the rodeo performances, and was found very useful. In our columns of May 24th (p. 927) and August 9th (p. 242) we described the systematic hygienic supervision of the whole exhibition, and it is satisfactory to note that the general health was very good. The difficult problem of preserving the health of natives coming from climates very different from that of the summer of 1924 was satisfactorily solved.

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THERE are plenty of statistical textbooks and plenty of people who advise medical men and students to learn statistics. In fact, the plan of the School of Hygiene, drawn up some years ago, made some provision for this science, applied science, or art—the learned differ as to the correct designation. Short practical expositions of the utility of statistical methods are, however, less common, and the Fatigue Research Board has done well to publish Mr. Udny Yule's lecture on the function of statistical method in scientific investigation.[1] The claims Mr. Yule makes on behalf of the, let us say, *method* of which he is so great a master are by no means excessive. Some statisticians would dissent from the suggestion that even the most perfect experimental investigation can be fully appraised without recourse to a statistical method. But even if the use of the statistical method is strictly confined within the limits Mr. Yule suggests, there will be more than enough work for all the statisticians America can train or hire during the next hundred years. Thus, Mr. Yule writes: "The expert in public health, for example, must take the records of deaths as they occur, and endeavour as best he can to interpret, say, the varying incidence of death on different districts. Clearly this is a very difficult matter. The proportion of deaths to population in a district is affected not only by its sanitary condition—however broadly we interpret that term—but by all kinds of other circumstances; not only by such definite circumstances as the age of the population (if there are many of the old this will tend to throw up the number of deaths) and the proportion of the sexes (age for age, the mortality amongst women is usually less than amongst men), but also by that medley of circumstances which differentiates any chance sample of individuals from any other. The purpose of *experiment* is to replace these highly complex tangles of causation which confront the unfortunate investigator who is limited to pure observation, by quite simple systems in which only one causal circumstance is permitted to vary at a time. When this is done the effects of changes in the one factor stand out clearly by themselves. When it cannot be done, the effect of changes in the one factor is overlaid by the effects of all kinds of other causes, 'disturbing causes,' as they may be called, for they are causes the operation of which we wish to exclude, and they disturb the simple effect of the one factor the influence of which we wish to note. Statistical methods are methods for handling and elucidating the meaning of data affected in this way by 'disturbing causes,' or generally by a multiplicity of causes. Hence their very wide applicability." Mr. Yule demonstrates the utility of the method on a series of problems chosen from different fields. He points out how certain algebraical results, which at first sight might seem of purely academic interest, are found to be useful tools in seemingly unrelated practical researches. Thus a result in statistical algebra first obtained by Poisson was employed (in two cases independently rediscovered) in a research on the emission of radio-active particles, in a study of haemocytometric counts, in an investigation of industrial accidents, and in a paper on the bacteriology of water. Mr. Yule conveys a great deal of information in an attractive style. Although primarily intended for the field investigators of the Industrial Fatigue Research Board, this report deserves a wide circulation and should appeal to medical readers.

[1] Report No. 28, Industrial Fatigue Research Board. London: H.M. Stationery Office. 1924. Pp. 14. Price 6d. net.

THE GENERAL MEDICAL COUNCIL ELECTION.

ON November 10th a London surgeon, Mr. D. C. L. Fitzwilliams, sent to a number of medical practitioners (we have no idea how many) a stencilled letter, beginning: "Within the next few days there will be an election of four representatives on the General Medical Council. I see that the B.M.A. are putting up four panel practitioners. As the whole of the profession is not panel, there is no reason why all our representatives should be panel doctors, and therefore I am asking you to vote for—" Here follow the names, with brief commendations, of Dr. R. Fielding-Ould and Mr. F. H. Westmacott, who are standing as independent candidates in the election of four direct representatives for England and Wales. One of the recipients of this circular letter forwarded it on November 16th to the Medical Secretary of the British Medical Association, who wrote next day to Mr. Fitzwilliams informing him that two of the Association's candidates are panel practitioners, and two—Dr. Bolam and Sir Jenner Verrall—are not. Dr. Cox added: "I suppose it is too late for you to undo the possible mischief you have done, but one can only hope that the members of the profession generally have taken more trouble than you evidently have done to know what is going on in the medical world." Mr. Fitzwilliams replied on November 18th that his attention had already been drawn to his error, which he only realized when he got the voting papers. He added: "As I am afraid I have mixed up four gentlemen proposed by some other institute with the four that were being proposed by the B.M.A., I am extremely sorry for my error, which I am afraid it is too late at the present moment to undo." The election will be over before this issue of the JOURNAL appears, but we think it right to place the facts on record.

THE next Australasian Medical Congress will be held in Dunedin, New Zealand, early in 1927, under the presidency of Dr. L. E. Barnett, who is retiring from the professorship of surgery in the medical school of Otago University, Dunedin. The general secretary of the Congress is Dr. W. P. Gowland; the associate secretary, Professor A. M. Drennan; and the treasurer, Professor D. W. Carmalt-Jones.

THE Secretary of State for the Colonies has appointed Sir William Prout, C.M.G., O.B.E., M.B., late Lieut.-Colonel R.A.M.C., to be senior medical adviser to the Colonial Office in London, in succession to Sir John Rose Bradford, resigned. Dr. A. E. Horn, C.M.G., has been appointed junior medical adviser, in succession to Sir William Prout.

THE GENERAL ELECTION.

THE result of the election for three representatives of the combined Scottish Universities in the House of Commons was announced on Thursday, November 13th. The figures were as follows:

Sir Henry Craik, K.C.B. (C.)	7,189
D. M. Cowan (L.)	5,010
Sir George Berry, F.R.C.S.Ed. (C.)... ...	3,781
The Rev. J. M. Munro (Lab.)	1,638

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[1] Report No. 28, Industrial Fatigue Research Board. London: H.M. Stationery Office. 1924. Pp. 14. Price 6d. net.

THE GENERAL MEDICAL COUNCIL ELECTION.

ON November 10th a London surgeon, Mr. D. C. L. Fitzwilliams, sent to a number of medical practitioners (we have no idea how many) a stencilled letter, beginning: "Within the next few days there will be an election of four representatives on the General Medical Council. I see that the B.M.A. are putting up four panel practitioners. As the whole of the profession is not panel, there is no reason why all our representatives should be panel doctors, and therefore I am asking you to vote for—" Here follow the names, with brief commendations, of Dr. R. Fielding-Ould and Mr. F. H. Westmacott, who are standing as independent candidates in the election of four direct representatives for England and Wales. One of the recipients of this circular letter forwarded it on November 16th to the Medical Secretary of the British Medical Association, who wrote next day to Mr. Fitzwilliams informing him that two of the Association's candidates are panel practitioners, and two—Dr. Bolam and Sir Jenner Verrall—are not. Dr. Cox added: "I suppose it is too late for you to undo the possible mischief you have done, but one can only hope that the members of the profession generally have taken more trouble than you evidently have done to know what is going on in the medical world." Mr. Fitzwilliams replied on November 18th that his attention had already been drawn to his error, which he only realized when he got the voting papers. He added: "As I am afraid I have mixed up four gentlemen proposed by some other institute with the four that were being proposed by the B.M.A., I am extremely sorry for my error, which I am afraid it is too late at the present moment to undo." The election will be over before this issue of the JOURNAL appears, but we think it right to place the facts on record.

THE next Australasian Medical Congress will be held in Dunedin, New Zealand, early in 1927, under the presidency of Dr. L. E. Barnett, who is retiring from the professorship of surgery in the medical school of Otago University, Dunedin. The general secretary of the Congress is Dr. W. P. Gowland; the associate secretary, Professor A. M. Drennan; and the treasurer, Professor D. W. Carmalt-Jones.

THE Secretary of State for the Colonies has appointed Sir William Prout, C.M.G., O.B.E., M.B., late Lieut.-Colonel R.A.M.C., to be senior medical adviser to the Colonial Office in London, in succession to Sir John Rose Bradford, resigned. Dr. A. E. Horn, C.M.G., has been appointed junior medical adviser, in succession to Sir William Prout.

THE GENERAL ELECTION.

THE result of the election for three representatives of the combined Scottish Universities in the House of Commons was announced on Thursday, November 13th. The figures were as follows:

Sir Henry Craik, K.C.B. (C.)	7,189
D. M. Cowan (L.)	5,010
Sir George Berry, F.R.C.S.Ed. (C.)... ...	3,781
The Rev. J. M. Munro (Lab.)	1,638

NURSING OF MENTAL PATIENTS.

Suggestions for Reform.

The Report of the Departmental Committee appointed by the Board of Control, with the approval of the Minister of Health, and presided over by Dr. C. Hubert Bond, to consider the nursing service in the county and borough mental hospitals, has recently been published.[1] A number of far-reaching recommendations are made, and the visiting committees are strongly urged to put them into effect at a very early date, because it is felt that an improvement in the nursing service lies at the foundation of advancement in mental treatment generally.

In spite of improvements in general conditions and considerable increases in wages, there is great difficulty in obtaining suitable probationer nurses in mental hospitals; and though, under the aegis of the Medico-Psychological Association, much activity in teaching and training is in progress, the figures as to duration of service reveal the fact that a far too high proportion of the women entering the service neither realize its vocational nature nor seriously intend to undergo training. It is regarded by many merely as a temporary means of earning a living, rather than as a career. The problem before the Committee, therefore, was to discover how the nursing service in mental hospitals could be improved so as to attract the right kind of applicant, because, as the Committee fully realizes, high qualities of heart and mind are quite as essential in the nursing of mental disorder as in the nursing of any other form of illness.

The Committee considers that if the mental nurse is to take her rightful place in the nursing profession and obtain an equal status with the general trained nurse, the most complete training and facilities for passing examinations must be provided. It feels that to obtain applicants with a good secondary education is not so much a question of offering high initial salary as of providing a really good training, with fair living conditions, and the prospect of well paid responsible posts on attaining proficiency. To secure equality of opportunity and uniformity in the standard of training it is considered essential that no mental hospital should accept nurses for training unless it is able to afford proper facilities for the purpose.

It is suggested that mental hospitals should be divided into three grades for the purposes of training—namely, hospitals possessing the necessary facilities for the full curriculum in mental nursing; hospitals possessing the necessary facilities for the final examination only; and hospitals not recognized as training schools. In order to make this scheme effective organized co-operation between two or more mental hospitals is obviously necessary. Senior probationers from the full training school would have to be sent to hospitals of the second grade to complete their training, and hospitals in which no training is provided would have to be supplied with staff nurses from other centres.

The Committee points out that to carry out properly its recommendations they must be adopted generally throughout the country. In a sense they contemplate a national service in which the same qualifications are recognized and required at all institutions for the same positions, and in which promotions may be freely obtained from one institution to another. In addition to reciprocity between mental hospitals, great emphasis is given to the need of co-operation between mental and general hospitals, as it is only in this way that adequate facilities for training in general as well as mental nursing can be secured. Dr. Bond and his colleagues think it of extreme importance that the facilities already existing in some places for seconding mental nurses to general hospitals should become universal and that authorities should encourage trained mental nurses to take a general nursing certificate. The hope is expressed that this procedure may be found practicable without any contravention of the Asylum Officers' Superannuation Act as to service, aggregation of service, and contributions. Should there be any doubt as to all or any of these matters it is thought that this should be removed by legislation. Conversely, it is believed that with the establishment of training schools there will be an added inducement for general trained nurses to gain experience of mental disorders, and that some understanding of elementary psychology, both normal and morbid, will be found increasingly necessary in general nursing.

We believe the insistence in this report on the necessity for mental nurses being equipped with an adequate knowledge of general nursing principles to be thoroughly justified, for not only are the subjects of mental disorder liable to physical disease, but many forms of mental disorder are the outcome of bodily disturbances—intestinal toxaemia, influenza, tuberculosis, encephalitis lethargica, syphilis, alcoholism, puerperal states, and biological changes occurring at critical periods of life. Such cases require active medical treatment and the highest nursing skill. A confusional psychosis needs attention as unremitting and assiduous as that needed in a case of pneumonia, and the modern mental nurse should be in a position to understand the great responsibility which devolves upon her in dealing with such a case. It may not immediately be possible for a great number of nurses to obtain a double qualification, but a beginning might be made if the committee, superintendent, and matron of each mental hospital endeavoured to get in touch with the general hospital in the area served by their institution.

One of the guiding principles of the Departmental Committee is that it is fundamentally important to regard mental nursing, not as a separate profession, but as a branch of the nursing profession. If the scheme formulated in this report were put into operation the status of the mental nurse would certainly be greatly enhanced, and an important step would have been taken towards a more complete hospitalization of the mental hospitals. We feel that the success of this scheme, which aims to effect a radical transformation of the mental nursing service, is dependent in a large measure upon the part which mental hospitals are to play in relation to mental disorder as a whole. If these institutions are to be dissociated entirely from the early treatment movement so that they will deal with even fewer recoverable psychoses than at present, it will be increasingly difficult to attract the best type of nurse or medical officer.

Every credit is due to the nurses in mental hospitals who, with marked skill and devotion, care for the chronic and infirm patients with which its wards are chiefly filled. Without minimizing the value of this good work, it must be said that the true nursing spirit flourishes with difficulty in an atmosphere of chronicity. It is scarcely worth while to bring these institutions, at great expense, to a condition of the highest medical and nursing efficiency if they are only to deal with irrecoverable cases. There should be a constant influx of recoverable cases to infuse a spirit of hopefulness throughout the whole institution. If local authorities are empowered by law to make provision for early and recoverable cases without certification, the mental hospital staff should take their part in the treatment of these cases, whether they are treated in villas on the estate, in separate clinics, general hospitals, or in out-patient departments. The mental hospital should be the administrative centre from which the various psychiatric activities of the district radiate. If such a policy is not pursued the mental hospital will be more than ever divorced from the community as a whole, and stagnation must be expected. If the nurses in these hospitals have nothing to look forward to but the exclusive care of chronic cases, it is difficult to imagine how the vision of a mental nursing service, such as is outlined in this report, can ever be realized.

The Committee is evidently of the opinion that more use will have to be made of the medical and nursing staff in mental work outside the hospital. It points out that the ascertainment and study of cases of mental illness and mental defect cover an immense field, and include school work, delinquency, indigency, various forms of institutional care, and the activities of welfare societies. At present these questions are dealt with, both centrally and locally, by different bodies, and the Committee feels that this leads to a loss of efficiency. The suggestion is made that the administration of all matters relating to mental health should be vested locally in one statutory committee of the county or county borough council, which committee should be in close touch with the

[1] Board of Control. Report of Departmental Committee on Nursing in County and Borough Mental Hospitals. 1924. H.M. Stationery Office. 1s. 3d. net.

public health committee. It is pointed out also that in organizing arrangements to meet the requirements of each area, much wider use could, with great advantage to the services, be made of the expert staff—medical and nursing—of the mental hospitals serving that area. If these suggestions were carried out a much more attractive career would be possible for the mental nurse than is at present offered, and there would be every inducement for educated persons to take up this work as a vocation.

THE NEED FOR EXTENDED SICKNESS INSURANCE.

ADDRESS BY LORD DAWSON OF PENN.

AT a meeting of the Insurance Institute of London (a body consisting of the officials of insurance companies) on November 17th, Lord Dawson of Penn, G.C.V.O., M.D., gave an address on the need for extended sickness insurance. Mr. G. W. REYNOLDS, President of the Institute, was in the chair, and the theatre of the London Institution, in which the meeting was held, was crowded.

Lord DAWSON explained that his proposals had no reference to the rich, who could provide for themselves, nor to the manual workers, who were provided for by national health insurance; he confined himself to the middle class—to people with an income below £1,200 a year. For the benefit of this important class the provision for sickness needed revision and extension. The public knew and cared much more about health than formerly, but with the acceptance of a higher health standard went increased cost. He instanced such conditions as persistent indigestion, kidney trouble, and chronic cough—conditions which formerly were allowed to drag on, but for the investigation and efficient and timely treatment of which the means were now available. But the means were costly; investigation might in certain cases involve chemical analysis or *x*-ray examination, and the treatment might be an early operation. The medicine of to-day offered many more resources than the medicine of yesterday, but the very excellence and complexity of the methods available involved the individual in a really burdensome cost.

Certain social conditions also pointed in the same direction. It was notorious that the normal life of the middle class was rendered arduous by the absence of domestic help. The arrival of a baby was looked upon by a domestic staff as something of a grievance, and there were few middle-class houses in which a long illness could be tolerated. The home as a place where illness could be treated must be supplemented by institutional provision. Again, the health of the individual was of fundamental interest to society. Prompt and efficient treatment diminished the extent of the disability of the breadwinner and shortened the time for which that disability operated. It would not be difficult to bring forward examples to show that people of moderate means had been handicapped in their careers for ten years or more owing to financial stringency following one serious illness in their family.

What he had in mind was not some State provision, which would involve State control. Of all the professions there was none which would be more cramped in its development, more damaged in its finer growth than medicine under State control. (Applause.) The reason was not far to seek. Over and above the technicalities of knowledge, there were certain harmonies of temperament which entered very largely into the relations of doctor and patient, and anything which interfered with that confidence and, so to speak, voluntary allegiance, would diminish one of the best things this country possessed. The problem of the State was to make sure that there was adequate organization and access to the best means of investigation and treatment of disease, combined with a reasonable amount of freedom in the personal relationships involved. The decisive middle-class vote against socialism at the last election must not be held to mean a policy of *laissez-faire*, and the presence of Mr. Neville Chamberlain at the Ministry of Health was an assurance that these problems would be approached with knowledge, courage, and sympathy. (Applause.)

Passing to the problems of organization involved in any extension of sickness insurance, Lord Dawson said that some further provision of institutional aid would certainly be needed. This would mean that cases were dealt with more economically as well as more efficiently, although it would not involve necessarily a patient's stay in hospital. The provision would include not only hospitals but clinics, to which he could go at certain times for examination and treatment. Towards this provision the middle-class patient must contribute, although the entire cost would be beyond his means. Lord Dawson thought it would be a proper function of the local community to provide such clinics and hospitals. Local communities were allowed to provide for education and to buy and administer land for recreational purposes; why not also for the organization of health? In this connexion he referred to the recent developments at Bath, where the Combe Park hospitals, now open, would, he hoped, stimulate other communities to make similar far-sighted provision. But with the setting up of these clinics and hospitals it was necessary to beware of certain dangers. Local authorities were apt to favour the whole-time service of doctors. Whole-time officers were necessary in many cases, but he would enter a caveat against any fresh multiplication of them, for this would prove to be the slippery slope leading to the nationalization of medicine. Moreover, in such nationalized services the patient would be separated from the doctor of his choice, and from the general practitioner would be withdrawn the stimulus to his intellectual powers which he got from contact with all the illnesses of his patients. It was upon the quality of the general practice in this country that the welfare of the community depended more than upon any other single factor.

Lord Dawson next discussed the question of cost, acknowledging himself in this field an amateur. But it seemed evident to him that the cost of a serious illness could not be met out of a moderate income. The obvious recourse was to insurance, which was extending its bounds in many directions, though not at all, or only very tentatively, in security against illness. He was well aware that any insurance scheme must be economically sound, and that there would be a tendency for the less healthy to insure and for the more healthy to stand out; this might be partly met by making the insurance cover all members of families. There was also the big difficulty of administration and inspection. To meet this he would suggest the formation of health societies in local communities, such societies to act as a buffer between the insured and the insurance company. The difficulty of a company in not knowing its liabilities might be met by fixing a maximum payment for any one year. He was against the limitation of insurance to named illnesses, because an insured person was then sure to have illnesses which were not on the schedule! Nor was he in favour of a scheme of insurance, already mooted in certain quarters, solely against an operation. But he was convinced that only by some measure of extended insurance could the problem be met, unless, indeed, we were to drift into socialism as applied to medicine. The organization might most favourably begin locally and at the periphery, in some progressive community such as a garden city, where the people formed a compact organization. But he thought it would not be unreasonable for an insurance company to interest itself in some well thought out scheme, with all due limitation of risk, and incidentally a sickness insurance would introduce "life" business and reduce the claims under life policies.

Sir ALFRED WATSON (Government Actuary) rejoiced that Lord Dawson had not in mind a further instalment of State insurance. The modern tendency was to regard all things as possible to the State, but he hoped the day was long distant when the intimate and vitally important services rendered by the family attendant would be taken over by a State official, possibly with penalties attached to the non-observance of his orders! As an actuary he found difficulty in defining a plan for a policy and rate of premium for such an insurance undertaking as Lord Dawson had in mind. The continual improvement in medical science made it a still more difficult proposition for an insurance body to cover the liabilities of a person who wanted all these benefits. More might be done on the lines of insurance against the loss of the breadwinner's income.

Sir WALTER KINNEAR (Ministry of Health) was glad also that the proposals did not involve a State scheme, although Lord Dawson had referred ominously to grants in aid. The speaker was continually reminded of the limitations of the national health insurance system, in spite of the fact that £1,000,000 a month was distributed in sickness benefit. There was a large and growing body of the community for whom no properly organized sickness benefit existed. He confessed that when he probed to the causes underlying the sickness brought to his notice in national health insurance administration, he was impressed by the fact that a very large proportion of it was avoidable if only earlier attention had been forthcoming. They were indebted to Lord Dawson for calling attention to this clamant public need, though the speaker's experience in connexion with the national system made him cautious before pronouncing an opinion as to whether a comprehensive and ubiquitous scheme on the lines suggested that evening was a feasible proposition.

Lord DAWSON said, in reply, that he had never thought that insurance alone would solve the problem, but that insurance should go hand in hand with some new public provision for sickness. What was needed was imagination. Possibly his own professional instincts inclined him to let his imagination run too loose, while the professional instincts of those he was addressing unduly restricted the range of their imagination. But he thought that much could be achieved by a round-table conference.

THE FUTURE OF MEDICINE IN INDIA.

Sir Gerald Giffard's Address.

The grave and complicated problem of the future of medicine and the medical profession in India was discussed by Major-General Sir Gerald G. Giffard, K.C.I.E. (I.M.S., ret.), in a paper, of which the following is an abstract, read before the East India Association, at Caxton Hall, on November 17th.

Sir Gerald Giffard introduced the subject by referring to some noticeable differences existing between the medical profession in Great Britain and that in India. In India, medicine is practically a Government department. Almost all the medical practitioners are or have been Government servants; the public health service is almost entirely a Government concern, and nearly all the medical schools and hospitals are Government institutes. In the second place, in India the existence of inferior and imperfectly trained practitioners (the subassistant grade) is officially recognized and tolerated; there are thousands of medical men who, although trained in Government medical colleges, have received so short and imperfect a medical education that they are not admitted to the British *Register*. In the third place, the I.M.S. is primarily military, as is also the Indian Medical Department. The needs of the army have, therefore, largely dominated the civil medical service; this was clearly seen in the war, when five-sixths of the officers of the I.M.S. and the whole of the I.M.D. were absent from their civil duties for several years. In the fourth place, financial and other support is given to the indigenous Ayurvedic and Yunani systems—those medico-religious vestiges of such knowledge as was available to the world one or two thousand years ago. The Viceroy and some of the provincial governors have lent their support to these systems; Indian politicians almost unanimously encourage them; and local governments, since the reforms, have in several instances voted money for their institutions and subsidized their practitioners.

In view of these peculiarities in medical organization in India it is obvious that there is room for considerable adverse comment. Sir Gerald Giffard drew a dark picture of the state of medical education and of medical practice generally. Some of the medical schools in India, he said, are shamefully inefficient, ill equipped, and badly staffed; and it is not fair to Indian students that an education such as is supplied should be considered good enough for the bulk of the Government and local fund work throughout the provinces. And as regards treatment, although there is, at headquarter towns, a more or less satisfactory hospital, the remainder of medical relief—the greatest part—is limited to hundreds of small dispensaries without beds, or with from two to ten beds, scattered over the land. These deal with many thousands of out-patients, while their medical staff consists merely of a subassistant surgeon, who has been imperfectly trained as a student, is left with hardly any post-graduate teaching, and often becomes little better than the village practitioner and the quacks by whom he is surrounded. It is deplorable that the only exponents of Western medicine to the great bulk of the people of India should be imperfectly educated, poorly paid, and isolated men, working in imperfectly equipped institutions far away from the comradeship of their professional brethren. If any improvement is to be introduced in these conditions, it would appear that it can only be by the instrumentality of European medical men. The future of medicine in India will largely depend on the advent of Indian medical discoveries, but there appears to be no doubt that, up to the present, Indians have shown hardly any aptitude for medical research.

For more than twenty years [Sir Gerald Giffard continued] I have urged the need for research on the students and young qualified medical men in the Madras Medical College, but so far without result. The great discoveries in tropical medicine have all been made by Europeans, and it would seem that further progress is dependent on European co-operation. These considerations lead to the important question whether Europeans are, in fact, to form any part of the Government civil medical services in India. If political India is to decide this question, the answer is No; on the other hand, if the Secretary of State and Government of India agree with the recent recommendations of the Lee Commission the difficulty of persuading young European medical men to enter the Government service in India will be very great indeed. The attractions of a medical career in India used to be (1) that no capital was required, (2) that good pay was given, (3) the old Indian Medical Service officer was an Imperial officer and held the King's commission, (4) the appointments open were clearly laid down and could not be held by any but a Medical Service officer, (5) all professorships were held by Medical Service officers, (6) private practice was considerable, and (7) there was a good pension, and there was no question that it would be paid. Nowadays the pension is by no means good, and it is uninsurable in London.

The Lee Commission's Report [Sir Gerald Giffard continued] recommends that the I.M.S. should be ended and that European medical officers should be obtained by provincial governments by transfers from the R.A.M.C., as well as by recruitment of Europeans into the proposed provincial medical services. But the R.A.M.C. at present cannot find sufficient recruits for its own needs, and the chances of obtaining additional recruits to serve under provincial governments seem to be remote, if not negligible. The Public Services Commission is, when established, to take the place of the Secretary of State in the recruitment and control of the superior civil services in India, except those which are under the provincial ministers—in other words, those whose position is most uncertain and whose future is most open to doubt. The Commission Report states: "In our view, therefore, the Public Services Commission should not forcibly be intruded in the provincial field," and "that if the Public Services Commission in India should be empowered to interfere on its own initiative in the provincial domain such action will be regarded as violating the principles of the reforms." This is a very serious blemish in the report, and it appears to ring the death-knell of any European medical service in India. It is impossible to conceive that any Englishman would join the Civil Provincial Medical Service under the orders of a provincial political minister without even the safeguard of being recruited by the proposed Public Services Commission. It must also be noted that the Lee Report refuses to define existing and accruing rights, or, in other words, leaves it to the minister to abolish as many appointments as he may choose and to refuse promotion which was to be expected when the officer joined the service. If it is admitted that European medical men are still very necessary in India, the proposals of the Lee Commission will assuredly fail to attract them, and for the following reasons: (1) They would deprive the future medical officer of his commission (except the R.A.M.C. India officers, who are to be compulsorily employed by the provincial civil governments, and it may be taken as certain that the latter will not employ any R.A.M.C. officer if they can avoid it); (2) they would deprive him of the protection of the Secretary of State; (3) they would deprive him of the protection of the Public Services Commission; (4) would make him serve as an equal with Indians who have an Indian degree but who would certainly be, in most cases, not as well qualified as himself; (5) they deprive him of his existing and accruing rights, or, in other words, deprive him of a certainty of promotion and of filling certain recognized appointments; (6) they put the control of his department entirely in the hands of an Indian political minister; (7) they take from him a large number of the professorial appointments which are considered to be the most lucrative appointments on the civil side of the Indian Medical Service; (8) they propose to pay the medical officer a lower scale of pay and allowances than would be paid by a commercial firm to one of their employees; and (9) they do not secure him his pension. In the light of these proposals, if they are to be adopted, it is difficult to be optimistic as to the future of medicine in India.

With regard to his own views, Sir Gerald Giffard pointed out that just as the political outlook in India is towards self-government, ending in Dominion status, to be reached

by graduated ten-yearly advances under the guidance of Great Britain and with the help of a gradually diminishing number of Europeans, so, in medicine, he desires to hear a Government pronouncement that the future of medicine in India is to be in the direction of instituting an Indian profession of medicine, similar to that of Great Britain, arrived at by a slow and orderly development involving the disappearance of all medical services (except perhaps that of public health). The Lee Report recommends the abolition of the I.M.S.; Sir Gerald Giffard would favour the abolition of all the medical services in India. It is the legitimate duty of Government to start or assist in starting medical education, and to build and equip institutions destined to advance medical science; but it is not its duty, nor is it desirable, that Government should maintain and pay for the whole body of the medical profession.

The present state of the medical services in India (he continued) is entirely unsatisfactory. In what country in the world is there to be found a medical profession divided horizontally into layers—the members of each layer (a service) separated, as in watertight compartments, from those above and below it? We have the R.A.M.C., the I.M.S., the I.M.D., the graduates of the Indian universities, the apothecaries, and the subassistant surgeons, the members of the one service being unable to pass into another. It should be possible for a qualified man to look forward to rising to the top of his profession without finding himself hopelessly handicapped from the start. It has been objected that the people could not get on if Government did not provide the services of Government medical officers. But already the great towns and many of the smaller towns could get on without the members of the Government services. General practitioners are already complaining that, with the hospitals staffed by the Government services, they are badly handicapped, and that they would willingly take them over and so save much money now spent in the salaries of Government servants, gaining for themselves the experience and the status of hospital physicians and surgeons of Great Britain; and it is probable that if this were done Europeans would be attracted to the medical colleges and hospitals of India, while it is almost certain that they will not enter the services in the present circumstances.

In conclusion Sir Gerald Giffard mentioned that a scheme suggested by him has recently been carried out by the Rajah of Panagal, the first Minister of the Madras Government. The scheme (he said) is based on the belief that the future of medicine in India cannot be a future of Government medical services. Although the medical graduates of Madras are relatively few in number, many of them are unemployed. They crowd into the towns where there are already too many doctors, and they have to compete there with the Government servants, who absorb the greater part of the private practice. These private practitioners have usually spent all the money they can command on their education, and therefore cannot make a start in the rural districts. The scheme proposes to subsidize these men and to supply them with a house for a certain number of years, and a free supply of medicines and apparatus. The subsidy will gradually diminish, leaving the doctors to succeed or fail as private practitioner. The scheme is a small beginning, and I hope, if the recommendations of the Lee Commission are also carried out, and the professional chairs are no longer held by the services, that the handing over of the top and bottom may eventually lead to the growth throughout India of a self-reliant, self-respecting, independent Indian medical profession.

In view of the development in the work among the blind owing to the operation of the Blind Persons Act, 1920, the Minister of Health has reappointed the Advisory Committee on the Welfare of the Blind for a further period of office. The Committee has been constituted so as to afford representation to the local authorities concerned with the working of the Act and to voluntary agencies for the blind, as well as to organized blind workers. The medical members of the Committee are Dr. J. J. Butterworth, Dr. Robert A. Lyster, and Dr. H. A. Powell. The Committee will advise the Minister on matters relating to the care and supervision of the blind, including any question that may be specially referred to it by the Minister.

THE HEALTH OF THE SCHOOL CHILD.

Sir George Newman's Report.

Under the above title Sir George Newman presents his sixteenth annual report as chief medical officer of the Board of Education.[1] The report is packed full of information on every aspect of the Board's medical work, and the reports of school medical officers throughout England are freely drawn on for illustration of the subject dealt with. The volume is divided into fifteen sections or chapters, with a series of eight appendices.

The final section is entitled "Conclusions," and is summarized here as referring succinctly to the subjects treated of throughout the report. The author legitimately congratulates himself on the fact that his series of annual reports has been of use, not only at home, but in the Overseas Dominions and to the governing authorities of many foreign countries. Those who are acquainted with the volumes can have no doubt that that is and must be the case. Notwithstanding his duty of advice to and criticism of local education authorities, he takes the opportunity of expressing to them his "full, sincere, and growing appreciation of the competency and devotion of their service." The present report, as he points out, is more administrative than usual, because, though never before has there been so much enlightened and organized effort on behalf of child welfare, yet for the success of the mutual and joint labours of all who are engaged in the work, whether officially or voluntarily, good understanding and wise, patient, and elastic administration are essential. There must be assent of the governed, adjustment of ways and means to ends, and due regard for the susceptibilities of the child and its parents, together with willingness to undertake new duties indicated by new occasions.

During 1923 the number of elementary school children medically examined was 1,754,919, and so far as the data available show, 19.4 per cent. were found suffering from serious physical defect requiring treatment. Excluding dental defects and uncleanliness, the total defects treated were upwards of 880,000. The great bulk of the treatment was carried out at the 1,076 school clinics of the education authorities, or at 390 hospitals under arrangement with the authorities. Some part of the work was done by private practitioners, especially in rural districts. Under the authorities' schemes 473,000 minor ailments were treated, 157,000 errors of refraction of vision were dealt with, 132,000 pairs of spectacles prescribed, 47,000 operations for adenoids or enlarged tonsils performed, 32,000 other cases of disease of nose or throat treated, and 37,000 cases of ringworm. Besides all this work arising out of medical inspection, there were estimated to be about 130,000 cases of physical or mental defect, and for these there were 530 special schools or sanatoriums accommodating 41,000 cases. Out of 317 local education authorities, 138 provided eleven million school meals, a total which is substantially less than for the previous year, or even for 1913-14. It is held that the medical services "have had the effect of increasing rather than otherwise an intelligent sense of parental responsibility in regard to the importance of the health of children."

The Chief Medical Officer proceeds to urge that there are four matters requiring the special attention of local education authorities at the present time—namely, medical inspection, medical treatment, the practice of hygiene, and organization of school medical work. Inspection must be both comprehensive and exact. Nine children in ten may be briefly examined, but the tenth may call for full consideration. He italicizes the dictum that "a high clinical standard of work is necessary." Also the education authority should take a wide view of its functions, should investigate absenteeism due to long-standing invalidity, should ascertain the character and degree of defects, should inquire as to obscure infective diseases, like encephalitis and poliomyelitis, and should make research as to physical standards and physiological variations.

Concerning medical treatment, he holds that though not less than half a million children were treated in 1923, yet outside the large towns many authorities have not made satisfactory provision. Eighty-three have no available organization for diseases of the nose and throat, 67 have

[1] London: To be purchased direct from H.M. Stationery Office or through any bookseller. 1924. 2s. net.

no organized dental treatment, 164 have done nothing for ringworm, and 14 still neglect the treatment of defective vision. Also, especially in rural districts, there is a serious difference between the number requiring treatment and the number receiving it. More might be done in following up, in making treatment available, and in prescribing the duties of the medical staff. The essential conditions of child health are, first, good eyesight and hearing; second, physical strength and muscular development; and third, sound digestion and assimilation of food. In other words, eyes, ears, physique, and teeth are the fundamentals for medical attention, as illustrated by the main grounds for rejection in 1920-21 of 360 per 1,000 of recruits offered for the army.

Next, as to personal hygiene in the case of school children, this is a matter mainly of education rather than of sanitation, and is perhaps the most important subject of the whole curriculum. Yet Sir George Newman declares—

"The plain fact remains that training colleges afford insufficient attention to this subject, and many local education authorities devote less attention to it in the school than is given to any other prescribed subject of the official curriculum. . . . The teaching of hygiene and the laws of health, by systematic instruction and by daily practice, should be undertaken in every school throughout England and Wales."

Finally, as to the organization of school medical work, it is advised that local education authorities should have regard (1) to the soundness and integrity of their scheme, and (2) to its proper association with the local public health service. Their own service should be uniform and comprehensive, its essentials being thorough medical inspection and the ensuring that medical care and treatment is available. An adequate medical and nursing staff and an efficient school clinic, though the best method, may be of little use without following up, and "owing to unwillingness and inattention rather than lack of knowledge or means, there are still many children deprived by the authorities of the minimum advantages of a medical service which Parliament has definitely declared they must have." Also children who are blind or deaf, or physically or mentally defective within the meaning of the Education Act, 1921, can only have proper provision made for them by means of a prolonged and serious effort on the part of the local education authorities. Only about 40,000 of 150,000 are at present in special schools. To ascertain all such children in their area is the duty of every education authority separately; to provide for them will nearly always require co-operation. Sir George Newman remarks that progress is being made in the usual English way, by spasmodic efforts to meet needs as they arise, and the piecemeal devising of a national scheme. The report concludes as follows:

"The present time seems likely to provide a landmark in the history of the school medical service. Everything is ready for further advance. We have, in most matters, ample knowledge as to what ought to be done; we have learned by experience how best to do it effectively and economically; we have an organization at hand, simple, well-tried, and capable of expansion as required. It is not that there are great extensions or exceptional achievements to record for 1923, but, owing to somewhat less financial stringency, and owing to consolidation and a fuller appreciation of the value of the service in regard both to the treatment and the prevention of disease among children, there is high promise of wide and fruitful development."

Having devoted so much space to the conclusions of the Chief Medical Officer, not very much can be said of the many important matters dealt with in the sections which compose the report. A few points, however, noted in perusal of the volume, may be mentioned:

(1) Many of the school buildings are defective, especially in some rural areas, some having fallen below a reasonable health standard owing to money stringency in recent years. The six most frequent sanitary defects are unpaved or unsuitable playgrounds, lack of water facilities, inadequate cloakrooms, uncleanly classrooms, insufficient heating in winter, and unsuitable desks.

(2) The alleged decadence of the rural child in Devonshire is the subject of a startling report by Dr. Corkery, school medical inspector there, quoted by Sir George Newman. It is partly as follows:

"The steady and manifest decline in the general physique, appearance, and stature of the rural child prompted me to select this theme for my special report for the year. The country-bred child was in former years far superior in health and vigour to its less fortunate sister and brother who were reared in a town, and the difference in appearance and health was obvious to the most casual observer, but the rural child has now lost its heritage and the town-bred child is now wearing the lost mantle. One formerly pictured the country child with a chubby face, pink cheeks, bright alert eyes, and sturdy figure, the 'Devon Dumpling,' in other words. Now you find many of the children in country schools (excepting the children of farmers) are pale faced, anaemic looking, with eyes lacking lustre, undersized, underfed, and sad faced, and without the *joie de vivre* expressed in their general pose and countenance. Why this change? That there has been a steady and progressive decline in the general physique of the majority of country children is abundantly manifest, nor is the decline associated with any special area, but exists practically all over the rural areas, even in moorland children, though I believe in the latter classes different causes operate. The chief factors causing this decline of health are, in my opinion: (1) Migration of the 'fit' from the country to the town and consequent breeding from the unfit. (2) Bad housing. (3) Lack of sufficient and suitable food. (4) Intermarriage. (5) Large families."

It is most important to know whether this represents the general experience of school medical inspectors in the rural districts.

(3) Action with regard to school closure for infectious disease has been revised. Such closure has hitherto been carried out in the financial rather than the medical interest, exclusion of individual children having led to loss of grant, which loss was prevented by complete closure, resulting, of course, in loss of education, the primary purpose of the school. That paradox is now to be remedied.

(4) Co-ordination of the work of the school medical officer with that of the certifying factory surgeon in respect of determining the fitness of young persons for employment in factories has been the subject of inquiry by a parliamentary committee. The committee's report was published in May, and in that month a clause was introduced into the Factory Bill then before Parliament. That bill (which, like many other departmental bills, lapsed at the dissolution) contained provisions dealing with the matter.

(5) *School Meals.*—In regard to this matter the report states:

"It is provided that there shall be charged to the parent of every child in respect of every meal furnished, such an amount as may be determined by the authority, unless they are satisfied that the parent is unable by reason of circumstances other than his own default to pay the amount."

In fact the figures show that parents from the beginning have contributed the merest fraction of the cost. In 1913-14 the total expenditure was £147,519, while the amount received from parents was only £2,997. The year 1918-19 appears to have been the best in this respect, the total expenditure having been £137,071, and the parents' contribution £21,902. The most recent year in the table is 1922-23, when the total expenditure was £281,251 and the parents' contribution £17,197. The year 1921-22 was altogether exceptional in outlay, the amount being £983,182, to which the parents contributed £15,822. The average cost of meals in pence ranged from 2.43 in 1913-14 to 6.99 in 1919-20. In 1922-23 the cost was 3.93 pence. A report quoted from Shropshire states that "the scheme should be self-supporting by means of small contributions from the parents," and in Kent, where there is a canteen system, "most of the canteens are now self-supporting" and "the number of meals supplied during the year ended March 31st, 1923, was 109,926. The number of meals supplied in return for payment by parents or funds raised locally was 161,754." At milk nutrition clinics under the London County Council "788,668 milk meals were given to necessitous children either free or for part payment, while 1,841,311 milk meals were paid for by parents in full."

(6) In the section dealing with research it is stated that special inquiries are to be made into the following subjects:

"(1) The incidence of disease among children under the age of 5 years. (2) The prevention of adenoids and enlarged tonsils. (3) The prevention of defective vision and squint. (4) The establishment of norms in regard particularly to height, weight, and nutrition generally. (5) The character, incidence, and prevention of rheumatism in children. (6) The study of encephalitis lethargica with special reference to after-care and education. (7) Problems presented by the mentally defective child. (8) The incidence and significance of goitre."

ROYAL COMMISSION ON LUNACY AND MENTAL DISORDER.

(*Continued from page 908.*)

THE seventh sitting of the Royal Commission on Lunacy and Mental Disorder was held on November 18th, Mr. H. P. MACMILLAN, K.C., presiding.

Evidence of Medical Superintendents of Mental Hospitals.

Dr. J. FRANCIS DIXON, medical superintendent of the City Mental Hospital, Humberstone, Leicester, gave evidence. Asked for any suggestions for the simplification or improvement of the code under which such institutions as his were worked, witness said that if some of the legal enactments were strictly interpreted innumerable difficulties could be raised; but if one could just go behind the letter of the law many of them would be overcome. He gave as an illustration the continuation order—a form for the purpose of continuing the original reception order. Under this order the medical superintendent had to state that in his opinion a patient was still insane and a proper person to be detained, and he admitted that he felt some embarrassment in giving a certificate of continued insanity in cases of convalescence or recurrent cases which might have a lucid interval lasting a year. He had, however, no doubt as to the desirability of the continued detention of the patient for a time, and during the convalescence of patients he frequently took advantage of the power he had to allow them out on trial.

The CHAIRMAN said that suggestions had been made that in the incipient stage it might be desirable to avoid the stigma of certification by some expedient, and he asked whether this might be met by the issue of a continuing certificate in a modified form. The witness thought that the form already in existence might be modified. He did not think it was necessary to say that the patient was still of unsound mind.

Asked whether he had encountered any cases in which, on examination of the patient admitted, he was satisfied that they were not proper cases for detention, Dr. Dixon said that he had encountered cases in which he was unable to confirm the statements made in the certificate on which the patient was admitted. That, however, was a somewhat delicate matter, because, although a patient might have had all the qualities assigned to him before he came in, these might not be present on his examination in the institution. If the medical superintendent had to say in his first report that the patient was in his opinion insane, he would meet with a considerable amount of difficulty.

The witness went on to deprecate the machinery by which a patient was compelled to go before a magistrate prior to certification, in that it created in the patient's mind a feeling that he had committed some wrong and was in the hands of the law. With regard to the suggestion that patients were detained when fit to be discharged, especially because they were found useful to the institutions, witness said that there was every possible reason why patients should be discharged, if only because the more cures a medical superintendent effected, the higher became his reputation. As to employment in the institution, there were always a number waiting to replace those who could be discharged. In his institution patients were classified, first of all, not according to their disease, but according to the amount of liberty that could be given them. He attached great importance to proper classification from the outset and to adequacy of accommodation for this purpose. In suitable cases, of course, definitely curative treatment was undertaken. There was now some improvement with regard to the conditions under which the nursing staffs of mental hospitals worked, but it seemed to him that the seniors did not receive sufficient remuneration, whilst the juniors in training were overpaid. In his opinion, mental nursing called for a very much higher kind of work and greater personal qualities than did general nursing.

In reply to the Chairman, Dr. Dixon said he thought it very desirable that persons with incipient insanity should be able to obtain treatment without necessarily being certified as insane. At the same time he thought that the stigma attaching to certification in the public mind was due to a misconception, probably due to past traditions with regard to the malady, and would diminish, though perhaps not entirely disappear, with general enlightenment. The Chairman asked whether it would not assist in removing that conception if people were treated in the first instance in homes or institutions which partook of a hospital rather than of an asylum character, where they might be detained for a period before being finally stamped—should this be found necessary—as insane persons. The witness said that this might even be carried further, and nobody at all be certified, if the mere certification was the bugbear; it would be possible to keep on renewing the temporary order. Certification was simply a protection to those who were dealing with a patient who required or might require some restraint; it might answer the same purpose if the doctors and not the patients were the certified persons. In reply to questions from other members of the Commission, the witness said that his own institution accommodated 1,000 female patients and about 350 male. The number of patients at the end of 1923 was 842. During that year there were 189 admissions, of which number 39 were readmissions. The rate of recovery was 37.12 per cent. of admissions. With regard to procedure on admission, if it was decided that the rate-aided patient should have the benefit of two medical certificates, as had the private patient, one of these certificates, if possible, should be made out by the patient's medical man and the other by a medical man specially qualified or specially appointed for the purpose. Earl Russell suggested that it would be an improvement if a person, instead of being described on the reception order as a certified lunatic, were described as "a mental case under compulsory treatment." Witness agreed that it would be well to start afresh and use some other word than "lunatic."

Dr. O. G. CONNELL, medical superintendent of the Norfolk County Mental Hospital, Thorpe, was the next witness. He said he had paid some attention to the safeguards against undue detention of persons in mental hospitals. The principle of the reception order was sound, but he thought the same procedure should be adopted in the case of the pauper as in that of the private patient, particularly in the respect that two medical certificates should be necessary. He agreed that many cases were so clearly certifiable that the second certificate would be redundant, but occasionally a patient was presented for admission who was not a lunatic although certified as such and detained for a week; with two certificates this was less likely to happen. The Chairman said that in borderline cases or cases of any difficulty it might be very proper to call in a second opinion, but to make it an invariable procedure would be very expensive. Answering questions with regard to his own institution, the witness said that in 1923 the recovery rate was 35 per cent. of admissions, and so far during 1924 it had been 45 per cent. This, of course, was below the rate in some other institutions, where the figure might reach 70 per cent., but it had to be remembered that these figures were not entirely governed by the rate of recoveries; they were governed by the number of patients who were suitable for discharge and for whom suitable outside care was available. The number of admissions during the present year was 197, of which only 7 were readmissions. He thought that cases likely to benefit by treatment should not be certified; they should come in as voluntary cases. At present he had no power to admit a patient who came voluntarily, and in one case in which such a patient came to his institution and insisted on remaining, the only thing he could do—he admitted it was an absurd thing under the circumstances, but he had no alternative—was to refer her to the police. Some patients who had been in the institution were quite ready on any recurrence of the malady to return.

The Chairman pointed out that the difficulty of the Commission in recommending action with regard to voluntary cases was that although, as the witness had stated, mental illness was on the same basis as physical illness, the former struck at the citadel of reason, so that some means of detention or restraint had to be available; moreover, there could be no dependence in mental illness upon the co-operation of the patient in measures taken for his own recovery. Dr. Connell agreed that if voluntary patients were admitted to a mental hospital some measure of control and power of detention must be permitted. He thought it would be sufficient if it was laid down that such a person could not leave the institution without a certain period of notice. Possibly seventy-two hours—the period mentioned in the Mental Treatment Bill which was before Parliament last session—would be sufficient, so that in the event of a breakdown the patient could be prevented from discharging himself for a time sufficient to enable the medical superintendent to get in touch with his relatives, guardians, or the relieving officer, and take measures, if necessary, for certification. Some provisional or emergency order would be requisite if voluntary patients were to be taken. With regard to after-care, the outstanding difficulty was the shyness of people to recommend for employment anyone who had been in an asylum.

The witness was questioned also with regard to complaints of ill treatment. He said that in his own institution, during the three years of his superintendency, only two cases had occurred, both of them really of a trivial nature so far as any injury to the patient was concerned, but both of them followed by the dismissal of the attendant, because it was essential to maintain the greatest discipline in these matters. In one of the cases a refractory patient had received a slap, and in the other, a nurse, in more or less involuntary self-protection against an action of the patient, hit the patient on the head with a broom, causing a slight wound. In reply to Sir David Drummond, the witness said that he thought more provision should be made for the study of insanity in the curriculum of the medical student; doctors entering their profession had very little knowledge of insanity, although they acquired knowledge subsequently by experience.

Paris.

[From our own Correspondent.]

November finds the medical profession of Paris in its normal state of activity. With the advent of October *la vie médicale* showed the first stirrings of reawakening after the lethargy of summer. Since the war the laity has won the right to a period of rest each day and each week, but the doctor is obliged to wait until his annual holiday. Strange consequences are therefore observable, particularly in the domain of surgery, and visitors to France find it difficult to understand why closed doors and silent telephones confront pilgrims seeking those of our celebrities whose fame has travelled beyond our frontiers. Emergency cases have to be content during the holiday period with theatres deserted by the stars of surgery; hospital work is carried on by the junior staff, and teaching comes almost to an end. Meanwhile our invalids journey instinctively to the particular watering-places chosen by our profession for its summer retreat.

Thermal Treatment.

The ever-growing fame of thermal treatment is a curious phenomenon of this post-war world. Highly specialized French spas have verily now become provincial schools of medicine, and intensive propaganda has resulted in each set of "baths" being labelled like an advertisement. We find accordingly baths for the liver, for the heart, and for the kidneys, or, again, we have baths for the "algias," for hypertension, and for constipation. Such a classification, admittedly convenient, is, alas, not tuned to the subtle requirements of clinical treatment. While we groan under this crude notoriety of press and poster, we must needs take things as we find them.

The Age of Official Medicine.

It is sometimes necessary, nevertheless, to school ourselves to view things as they will be, and to picture the future reconstruction of our professional life after the revolution heralded to-day. It is highly probable that the Parliament elected last May will enact insurance legislation on the lines approved by the previous Parliament. This legislation has a basis of electoral approval, and so the majority parties will, doubtless, unite again to present this handsome gift to their supporters, the bill being paid by the medical profession. So begins an age of State medicine, which will bring about the transformation of the doctor into a bureaucratic official. It may come clad in the outward semblance of a forward movement, but for us it disregards the essential principles of our charter of medicine—namely, professional secrecy, and free choice of doctor. Every such foreshadowed law, and every official regulation which threaten these principles, ought then to be met by the resolute opposition of the profession banded together. We have, unfortunately, no organization comparable with the British Medical Association, and so we can only trust that such a body may spring into being in this hour of peril. It is inherent in the French character to set about organizing only under the pressure of immediate circumstance.

From the point of view of those who advocate this law the doctor is simply a "producer": he produces treatment just as other people produce chocolates or shoes. The intangible elements in our work are not taken into consideration at all. Could the realities of medical practice be more absolutely misconstrued? They offer us a general contract, a central fund, a book of coupons, a system of control complete with controllers, and a remuneration so low as to compel the doctor to compress the maximum number of visits into the minimum time—in short, the "commercialization" of medicine. How, then, will the French doctor, jealous of his rights and essentially a critic, behave? Yet without his help the law cannot come into effect. Will some compromise be found? This we shall learn in the near future. Our profession stands firm on the sacred principle of professional secrecy. It is, moreover, the rampart which guards our honour—a rampart to repel on the one hand this threatening law, and, on the other, the Treasury exaction which would compel us to keep an account book inscribed with the names of our patients and the fees paid. We refuse to write down in black and white such an entry as this: "Madame A., three intravenous injections: 300 francs," in order that the Treasury inspector may come to Madame A. to inquire if perchance she has been charged excessively in the treatment of an illness admittedly of a private nature. As an illustration of the length to which equality mania can be pushed in a democracy, it has actually been suggested that professional titles should be taxed. The chief of the Paris Faculty has uttered a public protest against this absurdity.

Auguste Broca.

With the passing of Auguste Broca at the moment when we were celebrating the centenary of his father, *le grand Broca*, there disappears one of the most typical Paris surgeons of our time. His professional dignity and stern scientific uprightness will long remain as a great example to be copied. He had a most warm-hearted nature, coupled with impulsive liberality. This impulsiveness rendered him famous, especially when he was called upon to defend his opinions or his principles, for which he fought battles with tongue and with pen. During the last years of his life, to the amazement of the world, he was with difficulty stopped from rushing, sword in hand, into a fight with one of his colleagues in a personal quarrel. With Broca have passed away Talaguier, Richelot, Hallopeau, and Rochard: this has been a very cruel year for the surgeons of Paris.

Scotland.

Measles and Whooping-cough in Edinburgh.

A circular has been issued by Dr. Robertson, Medical Officer of Health for the City of Edinburgh, intimating that, in view of the prevalence of measles and whooping-cough in the city, the Town Council has decided to pay a fee for the notification of the first case of measles and whooping-cough occurring in any house. The object of this notification is to apprise the Public Health Department of the existence of cases of these diseases, so that home visitation by a qualified nurse attached to the Public Health Department may be carried out. It is not intended, however, that the visits paid by the nurses should be pressed in cases where they are not desired, and the medical practitioner who makes the notification may indicate on the form if he does not consider it desirable or necessary to have such visits paid. It is hoped by these measures to reduce the incidence and death rate from measles and whooping-cough, especially among children under 5 years of age. Attention is drawn in a notice to the public to the fact that these two diseases of young children cause a greater number of deaths than diphtheria and scarlet fever. For instance, during the three years 1921, 1922, and 1923 the total number of deaths from diphtheria in Edinburgh was 140, and those from scarlet fever 103, whereas during the same period the total number of deaths from measles was 258, and from whooping-cough 273. Extra accommodation has now been set aside at the City Hospital for infectious diseases in order to deal with children whose retention at their own homes is decided by the medical practitioner in attendance to be unsuitable. The Medical Officer of Health appeals to parents to assist him in his effort to have children removed to hospital before the onset of bronchitis or pneumonia, for the treatment of which many homes are quite unsuitable. He also points out that it means a great deal to the children's future health if a thoroughly good recovery is made from measles or whooping-cough.

Aberdeen University Lord Rector.

Viscount Cecil of Chelwood (Unionist) was elected Rector of Aberdeen University on November 15th, having a majority of votes in each of the four "nations" by which the election at this university is made. The four "nations,"

into which the votes are grouped, are Mar, Buchan, Moray, and Angus. The result of the voting was: Viscount Cecil (Unionist), 449 votes; Lord Meston (Liberal), 240 votes; and the Right Hon. C. P. Trevelyan (Socialist), 101 votes.

Parents and Public Health.

An address was given last week by Councillor W. J. Harvey, convener of the Public Health Committee of Edinburgh Town Council, to the Friendly Societies' Council of Edinburgh and Leith on the subject of public health. He said that recent public health legislation was sometimes subjected to the criticism that it had undermined the independence of the individual and lessened the personal responsibility in health matters. The collection of the population in large centres had, however, made it impossible for man to fend for himself and had made State provision imperative in many directions. In man's social life there were four forces which threatened him communally and individually. These were insanitation, ill health, poverty, and indifference. With regard to the last, the attempt which was made by the parent to acquire fuller knowledge of child dietetics, hygiene, and similar subjects, and the encouragement to attend clinics, did not tend to lessen personal responsibility. On the contrary, these factors should be a call to a fuller sense of responsibility by realizing the needs of the moment in order to assure a healthy future for children. The most difficult obstacle which public authorities had to overcome was indifference and irresponsibility, and public health authorities, while they did not intend to undermine responsibility, rightly attacked the indifferent and irresponsible.

Letters of Mary Queen of Scots.

An appeal has been issued, under the patronage of H.R.H. the Duchess of York, for subscriptions in aid of a fund to purchase, on behalf of the Scottish nation, a number of letters and documents relating to Mary Queen of Scots. An option has been secured to purchase these papers for a sum of £2,250 in order that they may be lodged in the Advocates' Library at Edinburgh, shortly to become the National Library of Scotland. That library has already become the repository of some valuable historical letters relating to the same queen, which were purchased in June, 1924. The papers consist of thirty items, including nine letters signed by the Queen, one signed by Henry, Lord Darnley, two letters from Queen Mary of Guise, two from James, Earl of Arran, one from the Earl of Lennox, Darnley's father, two from the Earl of Morton, and two from King James VI. The letters came originally from the family archives of John Mure, Laird of Rowallan, a prominent supporter of Queen Mary, and they are mostly unpublished. Persons willing to subscribe to this fund should intimate their subscriptions before November 30th to Dr. C. Stewart Black (Honorary Secretary, St. Andrew Society, Glasgow), 93, High Street, Paisley.

Central Midwives Board for Scotland.

The examination of the Board held simultaneously in Edinburgh, Glasgow, Dundee, and Aberdeen has just concluded with the following results: Out of 126 candidates who appeared for the examination, 102 passed. Of the successful candidates, 24 were trained at the Royal Maternity Hospital, Edinburgh, 23 at the Royal Maternity Hospital, Glasgow, 4 at the Maternity Hospital, Aberdeen, 14 at the Maternity Hospital, Dundee, 10 at the Queen Victoria Jubilee Institute, Edinburgh, 8 at the Cottage Nurses' Training Home, Govan, Glasgow, and the remainder at various recognized institutions.

Ireland.

Milk Supply of Dublin.

Professor Joseph Bigger, M.D., in a lecture under the auspices of the Royal Dublin Society, delivered in the Royal College of Surgeons, Dublin, said milk was a valuable food, and contained all the necessary food materials. One pint of milk, costing 3½d., supplied the same energy as 12½ oz. of beef (1s. 3d.), five eggs (1s. 3d.), four bananas (8d.), 1¾ oz. of butter (3d.), or 6 oz. of bread (1d.), so that it was a fairly cheap food. Milk was often adulterated by the subtraction of fat and the addition of water, but its chief dangers were from bacteria. Dublin milks contained on an average 600,000 bacteria per cubic centimetre in winter and 4,000,000 in summer. Tubercle bacteria of the bovine type were found in 8 per cent. of milks bought in Dublin. This organism caused a considerable amount of tuberculosis in children. Other diseases spread by milk were typhoid fever, scarlet fever, and diphtheria. Dirt bacteria came from the cow's excreta, and were the cause of infantile diarrhoea. The milking methods at present in use were unsatisfactory, and were the cause of the excessive numbers of bacteria in milk. It was shown that an ordinary labourer could be taught how to produce clean milk in a few days with practically no expense. The conditions under which a pure milk supply had been procured in the United States and Great Britain were explained by the lecturer, and he made suggestions for the procuring of clean milk in Dublin. For the best quality the cows should be tested by tuberculin, the methods of milking should be satisfactory, the milk should be supplied in bottles, and should pass a bacteriological examination. Such milk would cost more, but economies could be effected in delivery, only one delivery a day being necessary, as clean milk would not sour within thirty-six hours. Pasteurized milk was considered less satisfactory, but was much better than the milk now sold in Dublin. Anyone found selling filthy milk should be imprisoned, and prevented from selling milk thereafter. The chief danger to health arose from the dirty handling of milk. About 2 per cent. of cows suffered from tuberculosis of the udder, and it was a possible danger to the community. Another cause of contamination was that the flanks of cows were allowed to be covered with dry manure; indeed, the chief source of bacteria in milk was cowdung. Filtration did not remove the dirt. By clean methods milk should remain sweet for 183 hours, and these methods could easily be improved. Milking pails and buckets should be sterilized by steaming. Milk should be kept in a place where there were no odours of food or paraffin oil, and at the lowest possible temperature. In Dublin the same price was paid for bad as for good milk. Forty-eight per cent. of the milk sold in Dublin ought to be condemned as unfit for human food. It was essential for the health of the community that the public should demand clean milk. Professor Bigger regarded the present price of milk as excessive. Milk dealers were able to supply hospitals at contract prices enormously below what they charged the public. Good milk did not require heating; bad milk should not be heated. The speaker pleaded on behalf of the babies of Dublin, who acquired tuberculosis and became cripples through the dirty milk which they drank. Persons who sold dirty milk were really poisoning the life of the city. If public interest were aroused in the subject it would be possible to secure a satisfactory and clean milk supply.

Presentation to Dr. William Gibson, Belfast.

On the evening of November 12th Dr. William Gibson, sanitary surveyor and inspector of emigrant ships, Belfast, was presented with his portrait in oils, to be hung in the hall of the Willowfield Unionist Club, and with a replica and a portrait of Mrs. Gibson for their home. Dr. Gibson has been long known for his labours on behalf of the Unionist cause in the North of Ireland, but this work has always been combined with genuine and broad philanthropic leaning. He was mainly responsible for the erection and equipment of the Willowfield club and hall, situated in a densely populated district, where all could meet and enjoy social intercourse, and where friendly relations between all classes of the community were promoted, provision was made for the enjoyment of members, and a high sense of citizenship fostered. Dr. Gibson has been busy all through his life with innumerable undertakings: during the war he was secretary of the medical board of the Ulster Volunteer Force Hospital, where all who wore His Majesty's uniform were admitted; he was an active member of the Belfast Ambulance Committee, which supplied all the ambulances of the Ulster Division; and he was still engaged in the Hilden Hospital and in the Joint

Committee of the Red Cross and St. John. His civic labours also were many, varied, and always energetic and for the good of the people. The Prime Minister of Northern Ireland (Sir James Craig), the Lord Mayor of Belfast (the Right Hon. W. G. Turner), and many others were present, and spoke of Dr. Gibson's indefatigable public labours; the Right Hon. H. M. Pollock, D.L., M.P., Minister of Finance for Northern Ireland, proposed the toast of "Our Guest," and the Prime Minister unveiled the portraits. Dr. Gibson, in his reply, described the origin of the Willowfield Hall in which they now sat; it was free of debt, and they were already engaged in raising funds for the purchase and equipment of playing fields for the outdoor enjoyment of the members. He desired to thank all those who had joined in the promotion of the enterprise; their memorial tablet to the sixty-four members who lay in Flanders fields was always a stimulus to such work.

Correspondence.

SCIENCE OR ART?

Sir,—Not even the eloquence of a leading article will persuade the majority of us that medicine is a science. It is something greater: it is an art. Medicine is the greatest of all the arts, and all the sciences are but its helpers.

This conception of medicine is of great antiquity. The Periclean Greek, with his clear insight and his wonderful power of penetrating to the heart of a matter, accepted it. "Medicine is of all the arts the most noble," wrote Hippocrates, whom Plato grouped with Pheidias and Polycleitus.

Science is obviously of vast importance; to medicine it is indispensable, but it is auxiliary only. Science is the scaffolding without which medicine cannot be built up; but it is not the building. It is the machinery by which the worker works; but it is not the worker, nor his work.

The conception of medicine as a science is more than a mistake: that is why one takes the trouble to discuss it. It is really mischievous. For if medicine be a science, then, logically, our patients are primarily material for experiment. That, we know, is the German idea. But if medicine be an art, then the good of the patient is the end of all our effort. "No saveable life lost, no preventable suffering unprevented, is other than a deplorable failure, be the scientific aspect what it may." That is the English idea.

I repeat, medicine is the greatest of all the arts, and all the sciences are but its helpers. Its material is the most precious in the world: its triumphs have been the consolations of humanity. It gains nothing by being misnamed a science.—I am, etc.,

Exeter, Nov. 16th. W. Gordon.

THE GENERAL PRACTITIONER AND THE MATERNITY SERVICE.

Sir,—Your important leading article in this week's issue of the British Medical Journal (p. 911), the combined discussion at the Royal Society of Medicine on November 6th (p. 900), and also Dr. Gibbon Fitzgibbon's illuminating letter (p. 927), encourage me to add one more to the quota of facts steadily accumulating as to the part played, or perhaps that should be played, by general practitioners, the "institutions," and the local health authorities in the prevention of maternal mortality.

The point I would accentuate is, I think, important, especially as it seems to have been overlooked by many contributors on this subject, notably Dr. Bennett (British Medical Journal, October 18th, p. 741), and not mentioned by Dr. Fitzgibbon. It is that "hospital treatment" is not necessarily synonymous with the best obstetric skill. It is doubtless so in London and the really large centres, but in many other parts of the country the "hospital," the "Poor Law institution," the "fever hospital," or the "cottage hospital" are not necessarily—in fact are not—staffed by obstetric surgeons, or even perhaps by any interested in the matter.

I draw attention to this so that the administrative scheme shall cover this important detail, if and when it is evolved; and all of us with a desire to reduce this terrible scourge hope that reform will not be long delayed.—I am, etc.,

Norwich, Nov. 15th. Arthur Crook.

Sir,—Your appeal to the general practitioner in the Journal of November 15th to ventilate his views on this subject induces me to give my impressions of the practice of obstetrics. As I have an experience of over thirty-four years behind me, my suggestions for improving the position may possibly be helpful.

In my early days the qualified midwife had not come on the scene and we were dependent on the "handy woman" to help us. With the advent of the trained and certificated midwife matters were much improved, and the harassed and often overworked practitioner was not called on to spend so many useless hours at a case, or tempted, in the alternative, to risk "getting it over" with the aid of forceps.

The pendulum, however, has now swung too far, as the majority of cases are attended from first to last by midwives alone, the doctor's services not being requisitioned till something has gone wrong. Some patients, when expecting confinement, only *provisionally* engage a medical attendant, saying, "Will you come, doctor, *if* we want you." Naturally they do not send if they can possibly do without, on account of the expense. And as most doctors dislike midwifery they do not worry. But this practice opens the way to serious mishaps, and is altogether wrong. I will illustrate what I mean by two fairly recent experiences.

In the first I was provisionally engaged to attend a lady in her second confinement. I had attended when her first child was born in a perfectly normal confinement. When summoned on the second occasion I found that the midwife had been in attendance four days, the membranes ruptured two days—"a hand down" and, of course, the child dead. Version was very difficult and the patient very seriously exhausted. Result, sepsis—which by the way, I do not think I notified, as it was of the type often seen in such cases—sudden rigors, a rapid rise of temperature to 104° F. or over, falling to normal in twenty-four hours or less. Incidentally, I was blamed for the patient's condition, although the midwife was in attendance at several other febrile cases. Happily a good recovery was made.

The second experience illustrates where the present practice of midwifery is at fault. Here, again, the case was one of cross presentation, which, however, the young practitioner in attendance could not rectify single-handed. His partner, not taking on midwifery engagements, asked me to go and help, which I did. With some little difficulty delivery was safely effected, and I believe the patient, after some febrile disturbance, recovered. The point here is that the first practitioner probably lacked experience and the skill which only comes with experience. If called in earlier, perhaps things would have been different. I cannot remember if there was a qualified midwife in attendance. I rather think not, and I was not called on to see the case again.

Now, Sir, I do not see how the notification of puerperal sepsis is to help us in such cases as these. By itself, it certainly will not prevent sepsis, and to my mind it will always be an unsatisfactory procedure, at any rate as at present carried out. What is the use of training and licensing midwives to act alone in the management of labour, and leaving the young graduate helpless in the frequent emergencies for want of experience? The factor of time is all-important in many cases, and removal to a suitable hospital is not always either desirable or possible.

The remedy, to my mind, is a simple one, though probably it would require legislation. It is, *that in every case of confinement a medical practitioner be called to attend at least once, preferably at the beginning of labour.* This may sound a drastic step, and put forward to benefit the medical profession alone; but when examined closely I believe it would have the happiest results—to the patient, the nurse, and the doctor. It certainly would re-educate the mind of the public generally, bringing them to see their own responsibility in this grave matter of maternal mortality in childbirth.—I am, etc.,

Alex. P. Agnew, M.B., C.M.

Wymondham, Norfolk, Nov. 16th.

SIR,—In your article on the general practitioner and the maternity service you comment on the fact that only one general practitioner took part in the discussion. The fact is deplorable, but it is readily explicable.

The truth is, that the average general practitioner is a little weary of the innuendo that he alone is responsible for the high rate of maternal and infantile mortality. He is not even allowed to divide the opprobrium with the midwife. For example, an article in the current issue of a journal of popular medicine states: "The greatest factor in stillbirths and maternal mortality is, undoubtedly, delivery by forceps. It is, further, the greatest cause of subsequent sepsis." Such exaggerations hamper the work of the general practitioner and seriously impair his relations with his patients. It is not surprising that he finds it more compatible with his dignity, and his self-respect, to hold his tongue.

Hitherto, his practice has been the product of his teaching, and it is unreasonable to blame him for procedure which was universally taught until the last few years. Anyone who will take the trouble to look through the textbooks of only a few years ago will, I am sure, agree with me on the matter. Many eminent teachers of midwifery have frankly admitted that their views have profoundly changed during the last few years, and they will no doubt collaborate with general practitioners to evolve a practicable system of midwifery which cannot fail to benefit the community. No advance will be made by the persistent advocacy of methods which the conditions of general practice render impossible.—I am, etc.,

London, E.12, Nov. 15th. A. CAMPBELL STARK.

SIR,—In a pertinent leading article this week you inquire why the general practitioner seems to take so little interest in the maternity service dispute which, as you very justly remark, is "now raging." May I venture to suggest in reply that this dispute has not yet shown any promise of a practical outcome—the only note likely to arouse harmonious response amongst general practitioners. Not only is there no sign of practical outcome, but the dispute has passed into the realms of broad farce—I do not think that such a term is too harsh for the discussion which you report on notification. There is also more than suspicion amongst general practitioners that they have been most unjustly condemned (for example, in Dr. Janet Campbell's report) for something which is not their fault. Nor are those practitioners who have given special consideration to the subject unaware of the very slender basis of scientifically established fact which underlies the fulminations of the experts. The expert does not always seem to realize how slender it is, and I venture to elaborate the point in the hope that more attention may be given to it.

The thesis of Dr. Janet Campbell, Dr. T. G. Stevens, and others is that puerperal fever is due in the vast majority of cases to some fault of the doctor or midwife. This thesis ought to be submitted to scientific examination. It is in danger of becoming accepted by the public, to the vast detriment of everyone outside Harley Street.

The doctor or midwife is in attendance at the vast majority of labours, so that the *post hoc ergo propter hoc* argument is inviting. No more valid argument has yet been adduced by the experts. Yet, if it is to be accepted, it should at least be shown that puerperal fever is more frequent in those parts of the country in which sepsis is most prevalent or doctors most careless. In fact all statistics suggest the opposite. Or it should be shown that the usual causative germ is one which is most commonly encountered on the doctor's hands (which is not the case), or that the disease is less common when the case is handled by an expert (which has yet to be proved), or that it does not occur when labour has not been assisted (which is not so). The "*post hoc*" argument is too slender a stick to depend on, and the experts are hereby invited to produce something more convincing; and in so doing perhaps they will also explain the remarkable prevalence of an apparently identical fever amongst cattle in which there is no midwife or doctor or self-examination or coitus during pregnancy.

It is true that certain experts suggest no more than that the doctor and midwife (however clean their hands) convey germs from the vagina into the uterus and so set up puerperal fever. No evidence is offered other than the possibility of such happenings. The general practitioner would like to know from these experts exactly what steps they take to secure that the vagina shall remain aseptic during the whole of labour and whether they succeed in abolishing puerperal sepsis. We shall then be able to judge whether such steps are within the range of practical politics in general practice and also whether the fees allowed by the State would permit their employment. Another way in which the anti-practitioner case is stated is that puerperal fever is due to his omission to do something which he ought to do—for example, to wear gloves or to sterilize his instruments properly. The proof offered is ludicrous—namely, that in such-and-such a case gloves were not worn and fever occurred; in fact, the "*post hoc*" argument again. It has yet to be shown that there is any relation between the wearing of gloves and puerperal (or even ordinary surgical) sepsis.

Other illustrations might be given, but enough has been said to suggest, and to suggest very strongly, that the maternity service dispute shows more signs of ill informed prejudice than of scientific investigation, The truth is that practically nothing at all is known about puerperal fever. The available reports on its bacteriology are conflicting and few in number. Its distribution in relation to types of dwelling, etc., has scarcely yet been studied. Of factors predisposing to it, nothing is certainly known except that there are such factors. Its curative treatment is unsatisfactory and often futile, nor are the details of it agreed. Its prophylactic treatment (very successful in the hands of veterinarians) is apparently unknown to gynaecologists. And in this fog of ignorance wander those who have facilities of which the general practitioner can only dream, and they have altogether neglected those facilities in order to rail at the criminal carelessness (assumed) of midwife and doctor.

Surely, Sir, it is no wonder that the general practitioner takes little interest in the maternity service dispute.—I am, etc.,

Sevenoaks, Nov. 15th. GORDON WARD.

SIR,—The present notification is too late to reduce the septic death rate in childbirth. If, in its stead, every expectant mother was notified to the county medical officer, and it was his duty to see that the lying-in room and its surroundings were aseptic, and that proper arrangements had been made for attendance on the mother, not only professional but domestic, the number of these cases in private practice would soon fall.

It would be no use passing a law to this effect, unless arrangements were made for carrying out the orders of the medical officer. He would require skilled assistants free from local influence, and power to move the woman into hospital if his orders were neglected. How passive resisters could be dealt with I don't know! Herein lies the real difficulty, for expectant mothers often have very strong opinions, and the incidence of sepsis is too uncertain to easily prove them wrong.—I am, etc.,

Silverton, near Exeter, Nov. 16th. O. CLAYTON-JONES.

SIR,—One of the suggestions contained in Dr. Janet Campbell's report[1] is that medical practitioners should have the opportunity in difficult cases of calling to their aid a consulting obstetrician, the responsibility for the payment of whose fee should be borne by the local authority. As one of the younger members of the profession, practising in a purely industrial area, I have often felt the need of expert assistance and advice, and while I recognize that obstetrical operations are for the most part better performed in a lying-in hospital, yet this is not always possible or practicable.

I may say that, as a member of the Leeds City Council and deputy chairman of the Health Committee, I drew

[1] Reports on Public Health and Medical Subjects (No. 25). Maternal Mortality, by Janet M. Campbell, M.D., M.S. Issued by the Ministry of Health.

the attention of the Maternity and Child Welfare Committee, first, to the maternal mortality rate in the country, and secondly, to the suggestion quoted above. The result has been that the following recommendations were made to the council and ratified on November 10th, and a copy is to be sent to all medical practitioners in the city:

(*a*) That the fee paid to the consultant for his services be £3 3s. for a consultation without operation, and £5 5s. for a consultation with operation.
(*b*) That the medical practitioner be required to fill up a form giving details of the case, including the nature of the emergency and the name of the consultant, and to transmit the same to the medical officer of health as soon after the consultation as possible.
(*c*) That the claim for payment for services rendered be made on a special form to be supplied to each of the consultants on the staff of the maternity hospital.
(*d*) That the patient be expected to contribute towards the cost of the services of the consultant according to means, each case to be judged on its merits.

I, personally, should be very glad to see all city councils or local health authorities taking similar steps.—I am, etc.,

Leeds, Nov. 17th. CYRIL J. G. EXLEY.

PUERPERAL SEPSIS.

SIR,—Referring to the leading article and to the report of the discussion on puerperal sepsis in the current issue of the JOURNAL, I beg to submit that in nine cases out of ten puerperal fever is a specific streptococcal infection over the onset of which neither the patient, the nurse, the midwife, nor the doctor has at present much control.

Puerperal fever may occur after a miscarriage, after childbirth when the mother has not been attended by a doctor or midwife, and also when the utmost aseptic precautions have been taken and the most skilled attention been given. It is probable that the causal streptococcus is already in the neighbourhood of the uterus before labour commences. It is probable that, as in diphtheria and cerebro-spinal fever, many persons harbour the germ though they themselves are immune.

In puerperal fever the streptococcus can be grown profusely on blood-agar inoculated with a swab from the uterus, and in severe cases from blood cultures, from pleural effusions, and from metastatic abscesses. It is a streptococcus which has definite characters by which it can be identified in cultures from the uterus, and (with the solitary exception of finding it in the cerebro-spinal fluid in a case of chorea of pregnancy) I have not been able to find a streptococcus with similar cultural characteristics in any other infection, though I have been on the look-out for many years. In about 10 per cent. of cases of puerperal infection this streptococcus is not present; one finds faecal bacteria, streptococci of various sorts, and staphylococci as in ordinary septic wounds, and this occurs especially in cases where a difficult and tedious labour has necessitated much manipulation; such cases constitute real puerperal sepsis, and they are comparatively rare.

The above remarks are based on my investigations on over 150 cases, most of which were admitted into the puerperal fever ward of the Birmingham and Midland Women's Hospital when I was bacteriologist there. I believe that similar results have been obtained there up to the present time, and unless I am much deceived such results must appear wherever sufficient material is available for the investigator.

Now if puerperal fever is a specific streptococcal infection surely it should be possible to prepare a specific antitoxin, a serum as efficient as, say, antidiphtheritic serum, and as readily available. Or perhaps, if the specificity of the disease is generally admitted, a prophylactic vaccine may become available for those who wish to use it. And if it became generally understood by the public and by the medical profession that the diagnosis of puerperal fever implied no blame to the doctor, midwife, or nurse, but that its prompt recognition averted its chief dangers, many of the difficulties in regard to its notification would disappear.

If this letter leads to further investigation of this particular organism, its habitat and evolution, it is probable that facts may emerge which will enable us to reduce the incidence and mortality of puerperal fever.—I am, etc.,

Birmingham, Nov. 16th. LEONARD G. J. MACKEY.

XANTHOMA AND XANTHOSIS.

SIR,—In Professor M. J. Stewart's instructive and interesting article under the above title in the BRITISH MEDICAL JOURNAL for November 15th (p. 893) the term "xanthosis" is used for local changes associated with the deposition of lipoid material (cholesterin esters, cholesterin). I would like to point out that this term "xanthosis"—which, of course, literally means the condition of having become abnormally yellow—has already been applied to a yellow coloration of the skin (cutaneous xanthosis), especially of the palms of the hands and the soles of the feet, and in many cases the face also, which is not due to jaundice and is not necessarily (probably hardly ever) associated with any form of xanthoma.

Such a xanthosis of the skin was described in 1903 (International Dermatological Congress) by C. von Noorden in certain young patients suffering from diabetes mellitus. Since then, however, its occurrence has been noted in other diseases and in apparently healthy persons. The sclerotics are not at all, or only very slightly, coloured, and the skin never assumes the dark-greenish appearance that it does in cases of chronic obstructive jaundice.

The pigment in question is supposed to belong to the class of lipochrome, lutein, xanthophyll, or carotin. Cutaneous xanthosis is probably the same as Castellani's "ochrodermatosis" or "yellow disease," and has doubtless been described in France under the heading "xanthochromia cutis." Cachectic subjects seem to be more liable to cutaneous xanthosis than others, young wasting diabetics more than older well nourished diabetics, and poorly nourished children more than robust children, even when their respective diets are equally rich in carrots (cf. H. Salomon). The work on "carotinaemia" by Hess and Myers of New York (1919) was of special value in making generally known the possible effect of diets rich in carrots and other vegetables containing carotin on the coloration of the skin.

At the October meeting of the Dermatological Section of the Royal Society of Medicine I showed a case of characteristic xanthosis of the hands and feet in a grave case of diabetes mellitus.—I am, etc.,

F. PARKES WEBER, M.D., F.R.C.P.

London, W., Nov. 15th.

CARBON MONOXIDE POISONING.

SIR, — Dr. Cunningham Affleck (BRITISH MEDICAL JOURNAL, November 1st, 1924, p. 835) is wrong in saying that I agree with him "that poisons of an insidious nature are given off when certain fuel is burned," the fuel in question being coal gas. There are traces of sulphur acids in the fumes of a gas fire, and possibly traces of organic compounds similar in action to the tear gases used in the war, but these expend their energy in slightly irritating the respiratory membrane. There is not the least evidence that they are absorbed and act as insidious poisons.

Dr. Affleck says he can tell when carbon monoxide is present in small quantities, being possessed of an idiosyncrasy in regard to the action of the gas. He must have a hard life of it, seeing that carbon monoxide is present in tobacco smoke! Dr. Affleck had better lend himself out in place of the canary which is taken into mines in order to detect the presence of this gas, which to all men other than Dr. Affleck is undetectable.

The physiological facts concerning carbon monoxide are established; so are the facts concerning the harm done by breathing and living in a hot, stuffy atmosphere. Scientific measurements alone can decide which of these agents is working the harm.—I am, etc.,

London, N.W., Nov. 17th. LEONARD HILL.

SIR,—In your issue of November 15th (p. 926) Dr. John Laird states that it is desirable that someone "should give us a clear explanation of what actually does occur." He also asks the question, "Is it possible that the transient combination of CO with haemoglobin damages the latter?"

Whereas CO_2 and O both make feeble or loose chemical combinations with Hb, CO makes a much more stable combination. It is not a *transient* combination. Landois and Stirling, in their *Textbook on Physiology*, state that

COHb has been found after many months by spectrum analysis. When air containing CO is breathed by man it gradually displaces the O from the Hb volume for volume, and so prevents the oxygenation of the blood. In one of the more severe cases of poisoning by CO, transfusion of blood is the only treatment.—I am, etc.,

JAMES RITCHIE, M.D., F.R.C.P.Ed.

Slateford, Midlothian, Nov. 15th.

TONSILLECTOMY.

SIR,—I was very pleased to see Mr. Steward's letter on tonsillectomy in your issue of November 8th (p. 876). As an old general practitioner who had a good many cases of partial removal of the tonsils by the guillotine amongst my patients, I can bear witness that the majority were quite successful. Looking back, I do believe that in a small proportion of the cases enucleation would have been better. There must be a good many of the older practitioners and operating surgeons who could give similar testimony.—I am, etc.,

Bath, Nov. 10th. J. WIGMORE.

SIR,—I have read with regret Mr. F. J. Steward's letter in the BRITISH MEDICAL JOURNAL (November 8th, p. 876), in which he comments upon the resolution, unanimously passed by the Section of Laryngology and Otology at the Annual Meeting of the British Medical Association, which reads as follows: "That tonsillectomy by enucleation is the only efficient operation in dealing with tonsillar disease."

Mr. Steward considers that this resolution is "idealistic and goes too far." He recognizes that tonsillectomy by enucleation is the most efficient operation, but he considers that tonsillotomy or partial removal may be equally so in some cases, and I gather that he even advocates it as the operation of choice under certain conditions. One cannot but feel that such a view coming from so high and respected an authority must tend to encourage inefficient tonsil surgery and to harden the unskilled operator in his sins. To those of us who are constantly meeting with the disastrous after-results of such imperfect handiwork this is lamentable. Surely it cannot be too strongly emphasized that partial removal of a tonsil is an unsound surgical procedure; and that, if a tonsil requires to be operated on at all, the aim and object of the operation should be to remove the tonsil, the whole tonsil, and nothing but the tonsil; and further, that unless the operator has at his command the skill and facilities for ensuring this, he should be strongly discouraged from attempting it.

I am quite convinced that in a very large number of cases an incomplete operation is worse than no operation at all, and that in those cases where such a procedure appears to have been efficacious, the patient has got better in spite of the operation and not because of it.

Mr. Steward emphasizes the paucity of skilled operators. There I concur; but I regard this as a difficulty which should, and must be, overcome. I know from my own experience of certain districts that it can be. But we must preach perfection—not complaisance. To condone inefficiency is not the way to raise the standard of tonsil surgery, and I certainly consider the resolution in question absolutely sound. Idealistic it may be, but I believe it to stand for an ideal which is obtainable and which must be attained.—I am, etc.,

London, W., Nov. 10th. T. TWISTINGTON HIGGINS.

TREATMENT OF GOITRE BY IODINE.

SIR,—The recent literature and correspondence on the above subject published in the JOURNAL have induced me to relate my own observations and experiences regarding the treatment of goitre, and, for the sake of brevity, I will use the narrative form of statement.

In the year 1889, whilst casting about for a remedy for Graves's disease, of which I had the fortune—good or bad—to have under my care a small group of cases, I found that syrup of iodide of iron, whilst of no use in the object of my search, was of decided benefit in ordinary goitre. I forthwith adopted this form of treatment, pursuing it all through the years to the present time with marked success, and, although I have unfortunately no regular statistics to quote, it is no exaggeration for me to say that out of some 450 cases of the disease more than half were cured and a considerable number of the remainder, some of whom discontinued the treatment, were more or less benefited. Improvement was greatest and most rapid in the lateral enlargements, the central part of the gland responding less readily to the treatment, and this was especially the case when the swelling in this situation was of a smooth, globular character, for, after prolonged efforts to cure, the condition was practically *in statu quo*.

During my endeavours to relieve fastidious patients in their task of taking a somewhat disagreeable medicine, I found that capsules containing the solid constituents of the syrup of iodide of iron were a comparative failure—in fact, more so than could be accounted for by the respective degrees of digestion and absorption of the two forms of drug employed—and from this I should infer that the combination of saccharine matter with the iodide gives rise to a special therapeutic effect which does not exist when they are taken separately. This is a purely empirical fact, and I allude to it without the least intention of dogmatism, leaving it to your more scientific readers to form a better explanation than that given above.

The results of my observations would lead me to be strongly impressed with the belief that syrup of iodide of iron is the ideal remedy for goitre, superior even to iodine itself or any of its derivatives. A milder impression, formed too late in my field of observation for any degree of certainty, is a probable hereditary connexion between goitre and diabetes mellitus.

By way of personal explanation I would like to say that, although in the ordinary sense of the term I did not publish the above results, I spoke about the matter to my medical acquaintances, and went more fully into it at a meeting of the Warrington Medico-Ethical Society in the year 1911 during a discussion on a very able and interesting paper on the pathology and causation of thyroid enlargements by Dr. C. W. Hutt, at that time assistant medical officer of health for Warrington. The reception of my views on this occasion, however, was not such as to encourage me in the direction of further publicity, and I allowed the subject to drop.

I may add that the maximum success of this form of treatment depends to some extent upon several minor details and precautions, which I would readily furnish should my communication be of sufficient interest to any of your readers.—I am, etc.,

Prestatyn, North Wales, Nov. 14th. G. W. JOSEPH, M.D.

CROWNER'S LAW.

SIR,—With regard to the letter on coroner's law in your issue of November 8th, may I suggest that the ignorant interference and the "Lord High Executioner" disregard of courtesy complained of is likely to persist so long as non-medical coroners are appointed?

A county council recently elected a non-medical coroner for a county area. Among the applicants were three who possessed both a legal and a medical qualification, but the successful candidate was fortunate enough to have acted as deputy for his father, the late coroner. The new coroner will no doubt put forward a friend's name as his deputy, and so these posts will be virtually closed to competition for many years. The chief question put to candidates was whether they were "freeholders," this property qualification being necessary under the archaic Coroners Act of 1887.

It is to be hoped that when the long overdue amending of this Act is carried out the British Medical Association will bring forward the desirability of candidates having both a legal and medical qualification—or at least a medical one. At the present time the London County Council is the only one enlightened enough to demand both qualifications in its candidates, though by law it must still insist on the successful candidate becoming a "freeholder."

Might I add for your correspondent's information that complaints concerning any coroner can be addressed to the Lord Chancellor, who, though he has not powers of appointment, has powers to reprimand or remove a coroner?—I am, etc.,

Salford, Nov. 11th. E. F. HOARE.

Obituary.

GEORGE ERNEST HASLIP, M.D.,
Late Treasurer of the British Medical Association.

We had the sad duty last week of announcing the death of Dr. G. E. Haslip, which occurred on November 12th, at his house in London, after a long and painful illness, borne with great fortitude. It had been known to his friends for many months past that he was seriously ill and had undergone two severe operations. In July last his failing health compelled him to resign the post of Treasurer of the British Medical Association, which he had held with great ability and devotion for eight years.

George Ernest Haslip was born on August 7th, 1864, at Gravesend. He was the last surviving child of James Haslip. From Gravesend Proprietary School he went to the London Hospital, and obtained the M.R.C.S.Eng. and L.R.C.P.Lond. diplomas in 1887. After holding the posts of house-surgeon and clinical assistant in the medical out-patient department at the London Hospital, he obtained the M.D.Brux. degree in 1889, and the D.P.H. of the English Conjoint Board in 1891. In the following year he began general practice in Suffolk Place, Pall Mall, and continued to work there until 1913, when he moved to St. James's Square. For more than thirty years he was medical officer to the Corps of Commissionaires, and in carrying out the duties of that appointment he never spared himself. He was most regular in his attendance at the corps headquarters in the Strand, and, in fact, seemed to regard that as the first duty in his busy day; when necessary he was assiduous in visiting the men in their homes. During those years Dr. Haslip built up a large private practice. He acted as medical adviser to several large insurance companies, and was physician to a number of the largest West End hotels.

Dr. Haslip was elected Treasurer of the British Medical Association in 1916. He had been President of the Metropolitan Counties Branch in 1913 and Vice-President of the Section of Medical Sociology in the same year; but he was not at that time at all widely known to members of the Association. He had, however, been Chairman of the Medical Insurance Agency since 1909, and in that office had shown his capacity as a financier. No one knew better than he that in becoming Treasurer of the Association at the beginning of the third year of the war he was undertaking an onerous task. The general financial position of the country was, of course, far from satisfactory, and the British Medical Association was suffering like other undertakings which had a commercial side. He gave much time and thought to the questions which came before him, and was in very frequent consultation with the then Financial Secretary, Mr. Guy Elliston. The unexpected death of Mr. Elliston in April, 1918, very greatly increased Dr. Haslip's responsibilities and anxieties; he did not shrink from giving his time very freely, and visited the office practically every day for many months preceding and following the armistice. Through all this trying time he never lost his contagious courage and high spirits, and came to be regarded with the greatest admiration and affection by all with whom he worked in the Central Office. It was a very great grief to them to notice the slow failure of his health, which began about eighteen months ago. The Association was never more fortunate in the choice of an officer than in getting Dr. Haslip for its Treasurer in 1916.

Dr. Haslip was one of the original members of the Consultative Council on Medical and Allied Services appointed in October, 1919, by the first Minister of Health, Dr. Addison, to advise the Ministry on such problems as the national development and extension of medical, nursing, and midwifery work. In the following year he was President of the Section of Medical Sociology at the Cambridge Annual Meeting of the British Medical Association, and introduced, with characteristic vigour and directness, the discussion on the future of medical practice, which was reported in full in our issue of July 10th, 1920. It was at that Annual Meeting, the first held since the war, that the President, Sir Clifford Allbutt, was presented with his portrait, by Sir William Orpen, which now hangs in the Fitzwilliam Museum; the proposal to open a fund for the portrait originated with Dr. Haslip, and his was the driving force behind all the arrangements.

Dr. Haslip had travelled much on the Continent and gained considerable first-hand knowledge of foreign spas and the methods of treatment carried out at each. He was a regular attendant at the Section of Balneology and Climatology of the Royal Society of Medicine, and for some years served on the council of the Section.

The first part of the funeral service was held at St. Martin's-in-the-Fields, Trafalgar Square, on Friday, November 14th. A very large gathering of friends nearly filled the church. The coffin was guarded by an escort from the Corps of Commissionaires. The British Medical Association was represented by the Chairman of the Representative Body, Dr. H. B. Brackenbury; the Chairman of Council, Dr. R. A. Bolam; the Treasurer, Mr. N. Bishop Harman; and the Deputy Chairman of the Representative Body, Dr. C. O. Hawthorne. Past and present members of Council included Lord Dawson, Sir Jenner Verrall, Dr. Charles Buttar (President of the Metropolitan Counties Branch), Dr. S. Morton Mackenzie, Mr. H. S. Souttar, Dr. F. W. Goodbody, Dr. Christine Murrell, and Dr. W. Johnson Smyth. Among the officers of Branches and members of the Representative Body were Dr. Comyns Berkeley (Treasurer, Metropolitan Counties Branch) and the Rev. S. D. Bhabha, M.D. (Greenwich and Deptford Division). The head office of the Association was represented by Dr. Alfred Cox (Medical Secretary), Mr. L. Ferris-Scott (Financial Secretary and Business Manager), Dr. N. G. Horner (Assistant Editor of the *British Medical Journal*), Dr. G. C. Anderson (Deputy Medical Secretary), Dr. C. Courtenay Lord (Assistant Medical Secretary), together with many members of the headquarters' clerical staff. Wreaths were sent by the Council members and staff, and by the Finance Department. The second part of the service was at Walton-on-the-Hill Church, Surrey, not far from "Amberdene," the country house where some of our friend's happiest days were spent.

Dr. Haslip married Anna, daughter of Maurice de Leinkauf, of Vienna, a privy councillor to the late Imperial Austrian Government, and President of the Agricultural and Shipping Exchange. She, with two daughters, survives him.

Sir Clifford Allbutt, who was President of the Association during the first five years of Dr. Haslip's tenure of the office of Treasurer, writes:

It was with something of a shock that I heard of the death of my dear friend Dr. Haslip. Of his long and painful illness we were only too well aware; but in its very fluctuations lingered some hopes of his amendment. It is hard to lose old friends whose days have been many, and whose course is run, but it is far harder to lose one so dear and so helpful to us all at an age which should have been the prime of life, in him of a most valuable life.

Before my acquaintance with Dr. Haslip I had often noticed that handsome alert man passing out of his house, then in Suffolk Place, and going swiftly on his way. Then came acquaintance, chiefly by the happy chance of two or three consultations in private practice, an association which soon ripened into affectionate regard. Then in time of war we were brought nearer and nearer to each other as we worked together on committees of public service. Again, as Dr. Macdonald of Taunton will remember, Haslip was a welcome guest indeed to us for the Annual Meeting of the British Medical Association in Cambridge. Our last meeting, for since then unfortunately I had failed to find him at home, was in the Association week at Portsmouth, when we stayed at the same hotel at Southsea. His stay was short, as his health was then far from good; but we had at least one long conversation which we did not dare to think might be the last.

In every society Haslip's handling of affairs, and in in every debate his influence, made themselves felt at once. His fine presence and keen, mobile, intellectual features had their effect in every word he said; words always of force and persuasiveness; words of a man of acute observation, large practical experience, and outstanding ability. His grip of finance was but one side of an all-round

mastery of affairs, and of a sound judgement and foresight in times of change and development. Yet sound and capable as he was, Haslip was not merely a man of cool and calculating mind, but also of an ardent temperament, eager to see and to aim at the best possible purpose both in the present and the future. Business affairs and professional ideals were indeed but a part of Haslip's many-sided life. He had a lively and cultivated interest in the fine arts, and enjoyed the intimate friendship of many of the foremost artists of his day.

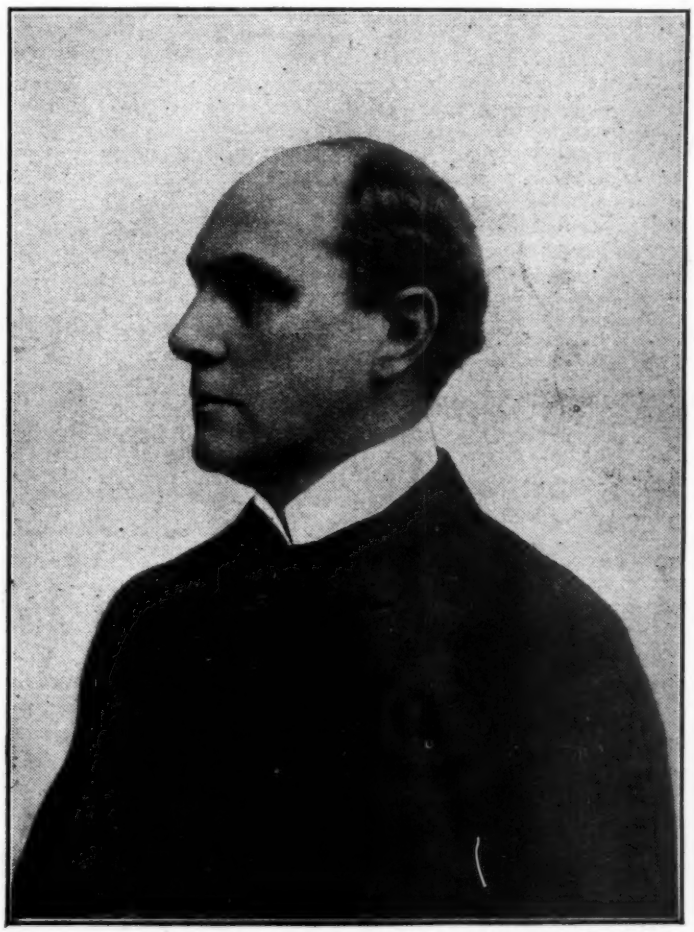
Haslip's earnest diligence, his able management of the finances, and his other services to the British Medical Association, and not only these but also his good work for our profession at large, will no doubt be set forth in full in our JOURNAL. I must be content to celebrate our happy fortune in having enlisted, even for a comparatively short term of years, a Treasurer and Councillor of endowments so rare, of sympathies so wide and cultured, and of a personal ascendancy so beneficent. Our hearts are moved with deep sympathy with his widow and children in their untimely bereavement.

Lord DAWSON OF PENN writes:

Running through Haslip's work was an intense love of justice and right. His judgements were never cold, but always aglow with feeling. His outspoken opinions, with their occasional impetuous expression, were inspired by an abiding desire to see the helpful hand extended to the less fortunate in life's race.

The tale of his public service, so little did he speak of it, was only known to the few. In the practice of our profession his success, in the best sense of the word, was great.

In this last illness the quality of the man stood forth—courage, first in struggle and then in dignified acceptance; gratitude; tender thought of others to the end. His memory will live and help us.



Photograph by] [London Stereoscopic Co.

G. E. HASLIP, M.D.,
LATE TREASURER OF THE BRITISH MEDICAL ASSOCIATION.

Sir HUMPHRY ROLLESTON, Bt., K.C.B., President of the Royal College of Physicians, writes:

G. E. Haslip's death, not unexpected by those who knew the nature of his long illness, removes a striking personality who did much for his fellows in our profession. Much occupied in a busy general practice, it is indeed remarkable how he found time for all the work outside the daily round that he accomplished. A good man of business with wide views and imagination, his services as Honorary Treasurer of the British Medical Association during a period of great activity and importance will receive the high appreciation they deserve from others more closely connected with this side of his activities. In addition he took a keen interest in charitable schemes for the poor and needy in the medical world, and with this end in view advocated changes in the Royal Medical Benevolent Fund and Epsom College. Having known him for more than twenty years, I had learnt to value his enthusiastic, high-minded, and attractive character, and to admire his grip of affairs and public-spirited devotion to work outside the scope of medical practice but concerning the well-being of those in and connected with his profession.

Dr. R. A. BOLAM, Chairman of Council, writes:

George Ernest Haslip's work for the British Medical Association was in many ways remarkable. It is given to few medical men to obtain that mastery of business detail which commands success in organization, to fewer still to exhibit great aptitude in matters of finance. Of this select number was Haslip. He came to be Treasurer in a time of financial anxiety and stringency for the Association, and in spite of ever-expanding activities and responsibilities its affairs were guided on sound and prosperous lines. Throughout the years of his office he did invaluable and enduring work for the interests of the Association in hours snatched from the brief leisure of a busy professional life. One of his last official acts was the signing of perhaps the largest cheque so far drawn on our account—for the purchase of our new house, in the negotiations for which his personal influence and acumen were conspicuous.

In medico-political affairs it would happen on occasion that Haslip took a view at variance with that of the majority. Yet he earned general respect for his fearless advocacy of a minority cause, and admiration for his loyal adherence to a general decision once taken. Whilst quick and keen in business matters, shrewd in judgement of men, and skilled in affairs, Haslip radiated sympathy and inspired affection. Those to whom the privilege of his friendship was given recall the many deeds of kindness, the ready appreciation of another's viewpoint, the instant tact—all offspring of a warm and generous nature. Through the last long months of suffering and uncertainty he showed that "Heraclean cheerfulness and courage" which led us to cherish till the end a hope heartfelt but unfulfilled.

Dr. J. A. MACDONALD, late Chairman of Council, writes:

It was with deep grief that I heard of the death of Dr. Haslip, yet I could not regret that the long-continued suffering which he had endured with such courage was at last at an end. Among the many friends I have made during my connexion with the administration of the British Medical Association, there were few dearer or who interested me so much as Dr. Haslip. In him a mind with keen business instincts, the impulses of an artistic nature, and dominated by an invincible honesty, constituted a personality which was very attractive and constantly interesting. In his invaluable work for the Association we were, not infrequently, at variance, and he never failed to support his opinion and express his criticism in forceful terms. Yet his opposition and criticism were never captious, and roused in me nothing but respect and admiration, as his actions and speech so patently had their origin in honest conviction. But it was at home or with a few friends at dinner that the lovable nature of Dr. Haslip had its fullest expression. His cheery optimism, his genial laugh, and his charity of outlook for others were a constant joy to those who were with him. In this respect I can never forget one week I spent with him as guests of Sir Clifford Allbutt at Cambridge. The intercourse with two such men will ever

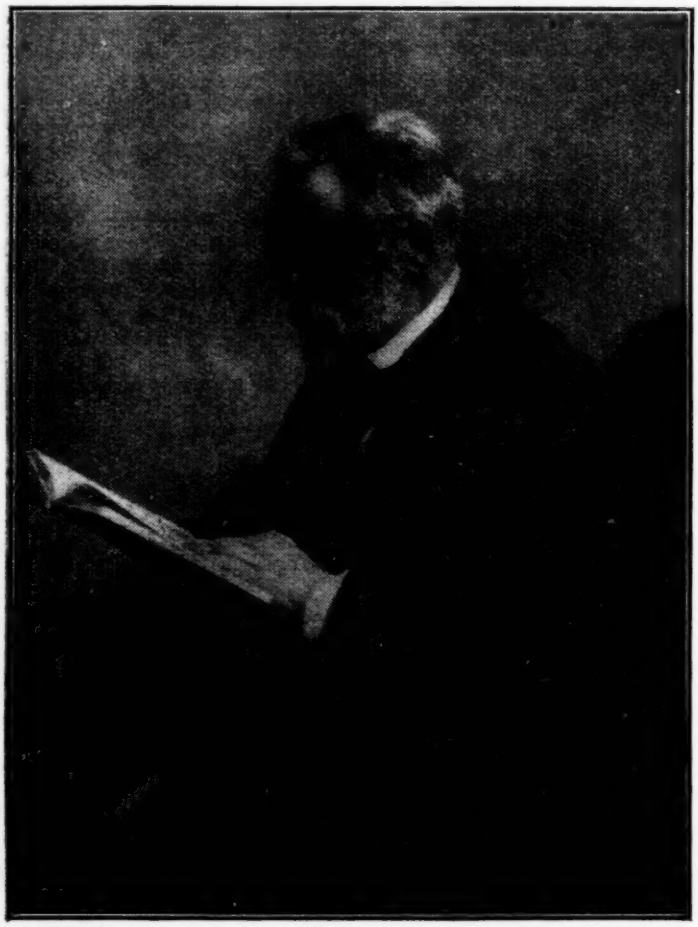
remain a gem in my memory. Among the many—far too many—friends who have passed away there are very few whose loss I shall regret so much as that of Dr. Haslip.

JOHN BENJAMIN HELLIER, M.D.,

Consulting Obstetrical Physician to Leeds General Infirmary.

IT is with great regret that we have to record the death, in his 72nd year, of Dr. J. B. Hellier of Leeds, which took place on November 8th. Until a short time ago Dr. Hellier was in active consulting practice. Of late his health had been manifestly failing and his gait getting weaker, but in spite of this he maintained a spirit of great cheerfulness to the end, which came rather rapidly.

The connexion of Dr. Hellier with the Leeds School has been a long and remarkably creditable one. He was a student of Leeds and University College Hospital, London, receiving the diploma M.R.C.S. in 1875. When in 1876 he graduated M.B. at the University of London with first class honours in medicine he brought credit to his school by being awarded the University scholarship and the Gold Medal in Obstetrics. He proceeded M.D. in 1878. He acted as demonstrator in anatomy and subsequently as lecturer in materia medica, in which department he was instrumental in founding the museum. He was for some time in general practice, but obstetrics and gynaecology were his chief interest in life, and his successive elections to the lectureship in gynaecology and to the professorship in obstetrics, associated with his appointment as gynaecologist to the General Infirmary, gave him full scope for his energies. In the year 1918, in accordanco with the rules of these two institutions, he became a member of the consulting staff of the infirmary and resigned the chair of obstetrics, the University marking its appreciation of his long services by conferring upon him the title of emeritus professor. He was a vice-president of the Section of Gynaecology and Obstetrics of the Annual Meeting of the British Medical Association at Liverpool in 1912.



Photograph by [*Rosemont (Leeds).*

J. B. HELLIER, M.D.

During the whole of Dr. Hellier's connexion with the Leeds University and Infirmary he manifested in a remarkable degree an unvarying and conscientious regard for the welfare of the school and of the students. Himself an admirable and impressive lecturer, he set a high value upon those lectures which were the result of careful thought and which consisted of something more than the mere vocalization of facts, and those who were privileged to listen to him soon came to understand that there were many things which could be learned from lectures which could not be learned from books alone. The members of the Leeds and West Riding Medico-Chirurgical Society will call to mind his many valuable contributions to its proceedings. Especially does the writer of this notice remember his admirable presidential address on the medical curriculum, its deliberate and thoughtful presentation illuminated with flashes of real humour. Indeed, anyone who should try to form an appreciation of Hellier's character without regard to his keen sense of humour would very properly fail. His nature was genial and kindly, and his humour was equally so; he never said an unkind word to anyone. The welfare of a medical school depends not only upon those features of its teaching and opportunities for research which lie upon the surface and can be seen by all, but upon the conscientious discharge by some members of the staff of those routine duties—sometimes almost regarded as drudgeries—which carry with them no recognition and no immediate reward. He was the author of *Infancy and Infant Rearing*, an article on "Fistulae in the female genital tract" in Eden and Lockyer's *System of Gynaecology*, and various publications in medical periodicals.

At the annual dinner of the past and present students of the Leeds School of Medicine, held on November 14th, Mr. J. A. Coupland, in responding to the toast of the staff, made a most touching reference to the loss which the school and the profession had sustained, and his words found a ready response in the hearts of all who were present. Dr. Hellier will be greatly missed, for he stood high in the respect of his colleagues and of his students, but he leaves behind him a record of work and an example which will live.

JOHN F. W. TATHAM,

M.A., M.D., F.R.C.P.,

Formerly Superintendent of Vital Statistics.

WE regret to record the death of Dr. John Tatham, which occurred at the age of 81, at his house in Oxted, Surrey, where he was living in retirement after a long period of important public service.

His first qualification, obtained in 1867, was the L.R.F.P.S.Glasg. In 1884 he graduated in medicine and arts at Trinity College, Dublin, and proceeded M.D. two years later. He was elected F.R.C.P.Lond. in 1893 and F.R.C.P.I. in 1906.

He obtained the diploma in public health of the University of Cambridge so long ago as 1876, and his life's work centred round that subject. His principal appointments up to 1893 were the medical officership of health for Salford, and then for Manchester, and his work there, in relation especially to vital statistics, was so good that when Dr. Ogle retired from the position of superintendent of vital statistics at the General Register Office, Somerset House, Dr. Tatham was appointed in his place in 1893. He held that post with credit and distinction for sixteen years, and in that way was responsible for two of the decennial supplements, which, begun by Dr. Farr, have ever since been looked on as the most important sources of information as to the causes and course of mortality, available to all who wish to study the subject. As medical officer of health, Dr. Tatham had issued life tables for Manchester, and during his tenure of office at Somerset House he devoted special attention to occupational mortality. Such statistics, though only records of deaths which have already taken place, constitute the basis of subsequent preventive and ameliorative work.

Dr. Tatham by no means confined himself to his strictly

official duties. When in Manchester he was lecturer on hygiene at Owens College, and later on he was chairman of the Statistical Committee of the Imperial Research Fund, and was a member of the Privy Council Committee on Physical Degeneration. Even after his retirement he could not be idle, and the writer of this notice had the pleasure of meeting him in clerical garb a few years ago, he having taken up such service, for which he was excellently qualified, in connexion with the war. Dr. Tatham was a man of fine presence and address, and a good speaker. He was a university examiner in public health and a past-president of the Society of Epidemiology. He was entertained to a public dinner both on the occasion of his leaving Manchester and on retiring from his appointment at Somerset House. At Manchester his distinguished successor was Dr. James Niven, who now also has retired. So generation succeeds generation, and Dr. Tatham, after a long and full life, has gone to his rest respected and loved by all who knew him.

M. G. HANNAY, M.D.,
Dean of the London School of Dermatology.

British dermatology has suffered a severe loss in the death, which took place on October 24th, of Dr. Maurice Gilbert Hannay. Dr. Hannay received his medical education at Charing Cross Hospital and at Edinburgh. Obtaining the London Conjoint qualification in 1900, he took up the study of skin diseases, being clinical assistant in the skin departments at Charing Cross Hospital and the Victoria Hospital for Children, and later at the Royal Infirmary, Edinburgh. He also studied at the St. Louis Hospital, Paris. Before the war he was in general practice in the South of England, but gave this up to take a temporary commission in the R.A.M.C. After seeing active service in France, he settled in London as a consulting dermatologist, and was appointed assistant physician to St. John's Hospital for Diseases of the Skin, Leicester Square. He had, in 1907, taken the degree of M.D.Brux, and in 1919 was elected to the Fellowship of the Royal College of Physicians of Edinburgh, of which College he had previously been a member. In 1921 he obtained the M.R.C.P.Lond. diploma.

Dr. Hannay took a large share in the formation of the London School of Dermatology in 1922. The arrangement by which the staff of St. John's Hospital combined with the teachers in dermatology at the twelve London teaching hospitals to give a systematic course in dermatology at St. John's Hospital seemed at first difficult of achievement. It was, however, finally brought to a satisfactory conclusion, largely by Dr. Hannay's enthusiasm and by his willingness to allow two appointments to the staff of the hospital to be made over his head. He was appointed first dean of the school, and carried out the difficult functions of this post with great diligence and tact.

Dr. Hannay was the author of several papers on dermatological subjects, the most recent being a very careful study of urticaria pigmentosa in adults, which he read before the British Association of Dermatology and Syphilology in July last.

JOHN GORDON BLACK, M.D.,
Harrogate.

We regret to announce the death of Dr. John Gordon Black at his residence in Harrogate on November 11th. Dr. Black was the doyen of the Harrogate medical profession. He was born in January, 1843, at Consett, co. Durham, where his father, Lancelot Black, was the first manager of the Consett Ironworks. His schooldays at Newcastle-on-Tyne Academy were passed under the head mastership of Dr. Bruce—a man of sterling character and erudition. He did not start the study of medicine until the age of 21, when he entered the Newcastle Medical School. He obtained the M.D.Lond. degree in 1871. After four years of strenuous work in general practice at Newcastle-on-Tyne, he had a serious breakdown in health, but a voyage to Australia restored him. On his return to England Dr. Black settled at Rothbury, Northumberland, in which place he spent some of the happiest years of his life. In 1881 he moved to Harrogate, and made a special study of the practice of balneology. He wrote monographs on Harrogate, and on the subject of rheumatism, gout, and allied affections; he was much interested also in gynaecology.

Dr. Black was at one time vice-president of the Yorkshire Branch of the British Medical Association. He founded and became president of the Harrogate Medical Society, and was a vice-president of the Leeds and West Riding Medico-Chirurgical Society. A keen chess player, he started the Harrogate Chess Club, and played a good game up to the last. He was also enthusiastic about golf, and gave a handsome challenge cup to stimulate interest in the game amongst the members of the Harrogate Medical Society. He was a good friend to the town of his adoption, and was held in great respect by his fellow practitioners, who recognized in him a large-hearted, generous, and kind colleague. He was twice married, and is survived by a widow and one son and one daughter, children of the first marriage.

THE LATE DR. H. C. MACTIER.

Dr. T. Connell Craig writes: Throughout a quarter of a century Dr. H. C. Mactier (of whom an obituary notice appeared in the Journal of November 8th) was in close touch at many points with the professional life of Wolverhampton, as consultant, general practitioner, and anaesthetist. He took a very active interest in the introduction of the National Health Insurance Act, and when the Panel Committee was first formed he became its secretary, holding this position until his death. He was always willing, and generally able, to give valuable advice and help in all matters connected with the South Staffordshire Division, and he will be very greatly missed. The Panel Committee also owes him a great debt of gratitude for the zeal he displayed as its secretary, and for the wide and intimate knowledge he possessed of the National Health Insurance Acts and the medical regulations they embody. It will be very difficult to fill his place adequately in either of these respects. Although he came into personal contact with almost every practitioner in the neighbourhood, and there were many occasions on which friction might easily have occurred, yet he remained to the end the friend and trusted adviser of them all. The esteem and affection in which he was held was shown very plainly by the large and representative gathering which met to do honour to his memory.

Dr. Frederick John Paley of Hove died on November 12th at the Royal Sussex County Hospital following an operation, aged 65. He was the son of the late Professor F. A. Paley of Cambridge, and was educated at The Oratory, Edgbaston, and at St. Bartholomew's Hospital. He graduated M.B.Lond. in 1883 and M.D. four years later; he also took the diplomas of L.R.C.P. and M.R.C.S. in 1883. After serving as resident medical officer at St. George's Retreat, Burgess Hill, and house-surgeon to the Women's Hospital, Brighton, and the Royal Sussex County Hospital, he began practice in Brighton in 1890. He had served as secretary, member of council, and president of the Brighton, Hove, and Sussex Medico-Chirurgical Society, and was senior surgeon to the Royal Sussex County Hospital. During the war he served, with the rank of lieutenant-colonel R.A.M.C., as commandant of the 2nd Eastern General Hospital. For his services to Catholic institutions he was created a Knight of the Papal Order of St. Gregory, one of the highest distinctions bestowed by the Pope. Dr. Paley was a member of the Brighton Division of the British Medical Association, and his death is keenly felt by many medical colleagues.

Dr. Charles Turner Standring of Broadway, Worcestershire, died on November 8th, aged 59. He was born in Kent, the sixth son of the late Mr. John Standring, and was educated at Blackheath School and King's College, London. He took the diploma of L.S.A. in 1891. After serving as house-surgeon to the Shrewsbury Hospital and as assistant in various parts of the country he settled in Broadway, where he continued to practise until his death.

He was at one time a member of the parish council; he also acted as instructor to ambulance classes. During the war he was on the staff of the Farncombe and Abbey Manor Hospitals, and was also medical officer for the Belgian refugees. Dr. Standring was a great sportsman and took an active part in most games; he was founder of the Broadway Golf Club started in 1896, of which he was first secretary, and continued to hold that post till 1921. He was a member of the Worcestershire Division of the British Medical Association. In the words of a colleague: "He was a cheery soul and made an extraordinary number of friends." He is survived by a daughter. There was a large gathering of friends and patients at the memorial service.

Dr. ROBERT RUSSELL HARPER, who died at the beginning of October, in his 71st year, was educated at St. Thomas's Hospital, where he obtained the diplomas of M.R.C.S., L.R.C.P., and L.S.A. in 1875. He practised first at Holbeach, in Lincolnshire, and later at Hampstead. During the war he was attached to No. 1 Birmingham War Hospital, and later became medical superintendent of the Pensioners Hospital in that city. Whilst a student he helped to organize the first inter-hospital Rugby competition.

WE regret to record the death, on October 30th, of Dr. HENRY CHRISTOPHER LAMPORT. Dr. Lamport obtained the degrees of M.B. and C.M. at Edinburgh, and was in private practice for many years subsequently, until ill health caused his retirement. He was for twenty years one of the honorary medical staff of the Royal Lancaster Infirmary. He had been a member of the 5th Lancaster Volunteer Artillery from 1890, and during the war served with the R.A.M.C.(T.F.), having charge of several hospitals and attaining to the rank of lieutenant-colonel. Since the war he had acted as honorary surgeon to the St. John Ambulance movement, becoming an honorary associate of the Order of the Hospital of St. John of Jerusalem in England. The funeral was attended by many friends and by representatives of the public bodies with which Dr. Lamport was associated. He was held in high esteem by all who came in contact with him, and those who knew him best will remember his unfailing cheerfulness and patience through a long and trying illness.

Dr. PETER THOMSON, medical superintendent of the Ochil Hills Sanatorium, Kinross-shire, died on October 30th. He was a native of Dumbarton, and received his medical education at the University of Glasgow, where he graduated M.A. in 1887, B.Sc. in 1900, and M.B., C.M. in 1893; he took the D.P.H.Edin. in 1918. After practising for a time on the south side of Glasgow he became assistant to the professor of anatomy at the Anderson College of Medicine, Professor A. M. Buchanan, who in the third edition of his *Manual of Anatomy* acknowledges with gratitude the valuable assistance rendered by his demonstrator, Dr. Peter Thomson, in preparing the edition for the press. He was formerly assistant tuberculosis officer for Glasgow, and was appointed to be superintendent of the Ochil Hills Sanatorium three years ago.

Dr. PERCY SLACK died at his residence in Rotherham on November 6th. He was the son of a Wesleyan Methodist minister, and received his education at Sheffield and St. Mary's Hospital. He took the diploma of L.S.A. in 1893 and the Scottish triple qualification in 1894. He was honorary radiologist to the Rotherham Hospital, honorary secretary of the Local Medical and Panel Committee, and a member of the Rotherham Division of the British Medical Association.

We much regret to announce the death of Dr. W. B. CRAWFORD TREASURE of Cardiff, until recently a member of the Council of the British Medical Association, formerly President of the South Wales and Monmouthshire Branch, and Representative and Chairman of the Cardiff Division. We hope to publish an obituary notice in an early issue.

Medico-Legal.

THE DISPENSING OF A PRESCRIPTION.

THE jury failed to agree in a case before Lord Darling in the King's Bench Division on November 17th, when negligence in compounding a medical prescription was alleged by Mr. Russell Boyd and his son, Geoffrey Russell Boyd, of Roehampton, against Messrs. Savory and Moore, Ltd., chemists, of New Bond Street.

The plaintiffs said that Mr. Geoffrey Boyd, who was now 22 years of age, was subject to epileptic fits, and Dr. Henry Head, on May 30th, 1922, prescribed for him a medicine to contain one grain and a half of luminal sodium. The defendants made up the medicine from the prescription on various dates between May 30th, 1922, and March, 1923, but instead of putting in one grain and a half of the luminal sodium they used only half a grain.

Dr. Head, asked by counsel: Can you say that the absence of one grain of luminal sodium each night for ten months has had any material effect on the course and progress of epilepsy?—replied, No, certainly not.

Dr. C. M. Hinds Howell agreed, adding that half a grain was quite a common dose to prescribe.

Sir William Willcox answered two questions put by the jury: Is there any cure for epilepsy recognized by the medical profession?—No cure.

Would continued use of drugs produce cerebral softening?—The continued use of a drug like luminal sodium in large doses certainly does cause mental degeneration.

Defendants denied negligence and said they acted reasonably in reading the prescription. They also said that the younger plaintiff suffered no damage.

Lord Darling held that there was no evidence which would justify the jury in returning a verdict for the plaintiffs, for the reason that the evidence called for the plaintiffs themselves was that it was impossible to say that the absence of the one grain of luminal sodium had produced any ill effects whatever. Therefore he considered it his duty to enter judgement for the defendants, with costs.

Universities and Colleges.

UNIVERSITY OF GLASGOW.

THE following degrees were conferred on November 15th:

M.D.—*Katherine O. Robertson, A. Anderson, Alice Cox (*in absentid*).
M.B., CH.B.—Isdale R. Taylor.
B.Sc. (*in Public Health*).—J. Wyllie (*in absentid*).

* With commendation.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

AN ordinary Council was held on November 13th, with the President, Sir John Bland Sutton, in the chair. The death of Mr. J. Hammond Morgan, C.V.O., past member of the Council, was reported and a vote of condolence was passed. Diplomas of Membership were granted to 245 candidates. (The list was printed with report of the comitia of the Royal College of Physicians, November 8th, p. 879). Mr. W. G. Spencer was re-elected a member of the Committee of Management.

A report, transmitted from the Royal College of Physicians, of the Committee of Management regarding institutions recognized for courses of instruction for the several special diplomas was received and adopted.

The Services.

COMMISSIONS IN THE R.A.M.C.

THE War Office announces that not fewer than twenty commissions in the Royal Army Medical Corps will be granted to successful candidates in an examination to be held in London on January 28th next. Applications to compete must be made not later than January 18th, and in the meantime a full statement of the duties and emoluments of the service can be had on written application to the Under Secretary of State (A.M.D.1.), the War Office, Whitehall, London, S.W.1.

DEATHS IN THE SERVICES.

Colonel William Lewis Gray, C.M.G., Army Medical Service (ret.), died of pneumonia at North Holt, Hythe, on November 3rd, aged 60. He was born in London on July 17th, 1864, the second son of the late Alexander Gray, M.D., of Selby, and was educated at Glasgow, where he graduated as M.B. and C.M., with commendation, in 1885, and at Edinburgh, where he took the B.Sc. in Public Health in 1888. Entering the army as surgeon on February 5th, 1887, he attained the rank of lieutenant-colonel on August 2nd, 1911, and colonel in the long promotion list of March 1st, 1915, retiring on August 10th, 1919. He served on the Anglo-Siamese Boundary Commission of 1889-90; on the Kieuglung-Chienghai mission of 1890-91; in the Chitral campaign on the North-West Frontier of India in 1895, when he took part in the relief of Chitral (medal and clasp); in South Africa in 1900-01, in operations in the Transvaal, Orange River Colony, and Cape Colony (mentioned in dispatches, *London Gazette*, April 16th, 1901, Queen's medal with four clasps); and in the war of 1914-18 (mentioned in dispatches, *London Gazette*, June 15th, 1916, and January 4th, 1917), and received the C.M.G. in 1917. In 1897 he married Janet, daughter of Thomas Orr, accountant, London, but leaves no children.

Medical News.

THE half-yearly dinner of the Australian and New Zealand Medical Association in England will be held at the Trocadero Restaurant, Piccadilly, on Friday, December 12th, at 7.30 for 8 p.m. All Australians and New Zealanders are invited to attend. The honorary secretaries are Mr. E. T. C. Milligan and Mr. H. Bedford Russell, 86, Harley Street, W.1.

THE Glasgow University Club, London, will dine at the Trocadero Restaurant, Piccadilly, on Thursday, December 11th, at 7.30 p.m., with Mr. D. M. Cowan, M.A., M.P., in the chair. Any Glasgow University men who, though not members of the club, desire to attend, are requested to communicate with the honorary secretaries, 1, Harley Place, N.W.1.

THE autumn gathering and dinner of the Irish Medical Schools' and Graduates' Association will be held at Pagani's Restaurant, Great Portland Street, W., on Tuesday, November 25th, at 7.30 p.m. Tickets (10s.) may be obtained from Dr. Holmes Meyrick, 48, Ennismore Gardens, S.W.7. The chair will be occupied by the President, Dr. William J. Corbett.

THE annual dinner of the University College Hospital Medical Society will be held on Thursday, December 11th, at Gatti's Restaurant, at 7.15 for 7.45 o'clock. Tickets (price 10s.) may be obtained from Mr. I. H. K. Stevens at the hospital.

THE winter livery dinner of the Society of Apothecaries of London will be held at Apothecaries' Hall, Blackfriars, on Tuesday, December 9th, at 7 o'clock.

A MEDICAL missions meeting, organized by the Society for the Propagation of the Gospel in Foreign Parts, was held in the Central Hall, Westminster, on November 12th. Speeches were delivered by the chairman, Sir Leonard Rogers, C.I.E., the Bishop in North China, Bishop Montgomery, acting secretary of the society, and the Rev. W. J. Simmons, chaplain of Westminster Hospital, who had organized the meeting. Sir Leonard Rogers in his address gave his personal experience of the great value of the medical missionary work in India. With reference to leprosy treatment, he added that though there were over 500,000 lepers in the British Empire, 210,000 in India alone, yet the new treatment was removing from early cases their symptoms and infectivity. Within twenty years the disease should become a negligible matter in those places where the treatment could be given on a large scale. The urgent need now was for more accommodation for treatment and for more medical missionaries. An organ recital was given before the meeting by Mr. E. Stanley Roper, F.R.C.O.

THE eighth course of lectures on psychological medicine will commence early in January at the Maudsley Hospital. Eight lectures will be delivered on Tuesday afternoons, commencing on January 6th, by Sir Frederick Mott, on the anatomy of the nervous system. Practical instruction will be given in microscopical examination and the preparation of permanent specimens. On Friday afternoons, commencing January 9th, eight lectures will be delivered by Dr. F. Golla on the physiology of the nervous system, including practical instruction in physiological chemistry. Dr. H. Devine will give a course of eight lectures on psychology on Thursday afternoons, commencing January 8th, with practical instruction and demonstrations. Part II of this course will follow in April, 1925, and include lectures and demonstrations on the diagnosis and treatment of mental diseases, mental defect and crime, pathology, and the practical aspect of mental deficiency.

AT a meeting of the Harveian Society of London held on November 13th, with the President, Dr. Reginald Dudfield, in the chair, a resolution was adopted thanking Mr. G. Buckston Browne for his generous gift of £1,000 for a prize in memory of his only son, Lieut.-Colonel Buckston Browne, D.S.O., lost in the great war. The council has invested the capital sum, and the interest will be used biennially, after deductions for expenses, for the prize. The full draft of the regulations governing the Buckston Browne Prize will be submitted to members at the annual general meeting on January 15th, 1925.

ON November 24th, at 5.30 p.m., at 1, Wimpole Street, Mr. Victor Bonney will lecture on cancer of the uterus. This lecture is the tenth of the series of twelve on cancer arranged by the Fellowship of Medicine for medical practitioners. On November 21st and 24th respectively two special courses start, one in gynaecology at the Chelsea Hospital for Women, and the other in medicine, surgery, and gynaecology, at the Royal Waterloo Hospital for Children and Women. The Royal Northern Hospital and the Royal Chest Hospital have arranged an intensive course in medicine, surgery, and the special departments from December 1st to 13th. The programme will include work in the out-patient department and wards from 10.30 a.m. to 5.30 p.m. each day, and special lectures and demonstrations at 4.30 p.m. are open to medical practitioners generally. On December 1st, at the Infants Hospital, a special two weeks' course will commence, including clinical demonstrations, "round table" consultations, and lectures. A short course in dermatology and venereal diseases will be held at the Hospital for Diseases of the Skin, Blackfriars, during the first fortnight in December. Details of these courses and also the programme for the early part of 1925 can be obtained from the Secretary to the Fellowship of Medicine, 1, Wimpole Street, W.1.

A MEETING of the Medical Prayer Union will be held, by kind invitation of Dr. Mary Scharlieb, at 140, Harley Street, W.1, on Wednesday, December 3rd, at 8 p.m. An address will be given by the Rev. R. Calder Gillie, M.A., D.C.L., on "Personality: God's chosen channel of self-revelation." An intimation of intention to be present will be welcomed by the honorary secretary, Dr. Tom Jays, Livingstone College, Leyton, E.10.

THE next Congress of the Royal Institute of Public Health, on the joint invitation of the Corporations of Brighton and Hove, will be held in those boroughs from Wednesday, May 27th, to Monday, June 1st, 1925 (Whitsuntide).

THE late Dr. W. Harrap Mason, who practised at Leeds, has bequeathed £1,000 each to the Leeds General Infirmary and Dr. Barnardo's Home, and £500 each to the Leeds Public Dispensary and the Hospital for Women and Children, Leeds. Subject to a few legacies the residue of the estate is left for such Leeds charities as the executors should select and the West Riding Medical Charity, the British Medical Benevolent Fund, and four other institutions mentioned in such proportions as the executors might think fit. The value of the estate is £19,115, with net personalty £13,163.

IN some new regulations for its staff the London County Council directs that if a case of infectious disease other than small-pox occurs in a house in which a school attendance officer is living discontinuance of his work is unnecessary unless he himself shows the slightest indication of indisposition, when work must be discontinued at once and medical advice be sought without delay. In the case of diphtheria, however, a special rule is laid down, that any officer who has been in intimate contact with a case must cease work and not resume until a medical certificate has been furnished that he is free from infection, and this certificate is not valid unless based upon a bacteriological examination.

THE next Congress of Thalassotherapy will be held at Arcachon on April 15th, 1925, under the presidency of Professor Gilbert of Paris.

MR. ARTHUR F. MACCALLAN, C.B.E., formerly Director of Ophthalmic Hospitals, Egyptian Department of Public Health, has received the King's permission to wear the insignia of the Second Class of the Order of the Nile conferred upon him in recognition of valuable services rendered.

DR. LAURENCE O. FULLER of Gray's Inn, medical superintendent of the Three Counties Mental Hospital, Arlesey, has been called to the Bar.

THE Hospital for Epilepsy and Paralysis, Maida Vale, has published a scale of fees chargeable in the pathological laboratory and the *x*-ray and Swedish remedial exercises departments. It is stated that, in accordance with the principles of the hospital, these payments will be voluntary, and may be reduced on the recommendation of a practitioner to meet the needs of individual patients.

THE P.L.M. Railway Company has issued a new edition of its attractively illustrated pamphlet, *Winter on the French Riviera*. The various places are described, and useful information with regard to the journey, the programme of winter events, and suggested excursions are included.

THE Chelsea Hospital for Women has received from the executors of the late W. B. Hextall £1,000 towards the £20,000 needed for completion of the nurses' home and opening of additional wards.

DR. H. L. ROCHER has been elected successor of the late Professor Denucé in the chair of the surgery of children and orthopaedics in the medical faculty of Bordeaux.

THE centenary of the birth of Joseph Rollet of Lyons, well known for his work on syphilis and soft chancre, will be celebrated at the Lyons Faculty of Medicine on November 30th. The ceremony will be attended by representatives from the Institut de France, Académie de Médecine, Société française de Dermatologie et de Syphiligraphie, French and foreign hospitals and universities. An address on Rollet's work will be delivered by Dr. Thibierge, honorary physician to the St. Louis Hospital, Paris.

Letters, Notes, and Answers.

Communications intended for the current issue should be posted so as to arrive by the first post on Monday or at latest be received not later than Tuesday morning.

The telephone number of the British Medical Association and British Medical Journal is Gerrard 2630 (Internal Exchange). The telegraphic addresses are:

EDITOR of the British Medical Journal, *Aitiology Westrand, London.*

FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westrand, London.*

MEDICAL SECRETARY, *Medisecra Westrand, London.*

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 4361, Central).

QUERIES AND ANSWERS.

Income Tax.

Motor Car Replacement.

"B. A. S." has claimed to deduct the difference between the cost price of his car and the amount for which it has been sold. The inspector of taxes proposes to restrict the allowance to the excess of the cost of a similar car *at the date of sale* over the amount realized.

*** Neither method is correct. The Income Tax Acts do not permit the deduction of sums representing loss of capital, with the exception of the depreciation allowance, which does not apply to professional earnings. The deduction to which "B. A. S." is entitled is the excess of the cost of a new car bought to replace the old one over the amount received by the sale of the latter, subject to the stipulation that the allowance shall not include any amount in respect of further capital outlay. When prices are falling the system works against the practitioner, but that result necessarily follows from the existing statutory regulations.

Glebe Rent and Ground Rent.

"Glebe" owns a house the income tax on which is deducted from the rent paid to him; out of that rent he pays £5 a year glebe rent and £5 a year ground rent.

*** The position is as follows: His tenant is not entitled to deduct a greater amount of tax than that applicable to the rent—that is, he should deduct the tax on £50 only and not the full tax on £52 10s., the amount of the assessment. "Glebe" is entitled to deduct tax in his turn from both the glebe rent and the ground rent provided that they are not separately assessed, and this is not alleged. The statutory authority for that deduction is in the Income Tax Act, 1918, Schedule A, No. 8, Rule 4, which states that "where any . . . hereditaments . . . are subject to the payment of any annual sum . . . a landlord . . . from whom tax is deductible . . . shall be entitled on making such payment to deduct and retain thereout so much of the said tax as represents the rate or rates of income tax in force during the period through which the said payment was accruing due." It will be noticed that the right is to deduct "on payment": it does not extend to cover a claim to recoupment for past periods for which payment has been made.

Dominion Income Tax Relief.

"J. S." writes: My total gross income is as follows: Professional income assessed at £200, taxed dividends £86, dividends from South Africa £324; total £610. Colonial income tax was paid on the £324 dividends, but has not been deducted in arriving at that amount.

*** His liability is as follows:

	£	£ s. d.
Total income	610	
Deduct earned income relief	20	
	590	
Deduct personal allowance	135	
Taxable income	455	
Of which £275 is chargeable at 2s. 3d. ... ... =		25 6 3
And the balance £230 is chargeable at 4s. 6d. ... ... =		51 15 0
		77 1 3
Of which there has been accounted for by deduction at 4s. 6d.	£85	19 7 0
Leaving a balance of		57 14 3

"J. S." is, however, entitled to a further allowance in respect of Dominion income tax equal to £324 at the Colonial rate, or at half his appropriate rate, whichever be the less; the appropriate rate is approximately 3s. 5d.

Epileptiform Fits.

Dr. D. S. C. Reid (Blackburn) writes in reply to "H. C. B." (November 8th, p. 883): For his case of epileptiform fits I should recommend him to try small doses of chloretone.

Pernicious Vomiting.

Dr. A. Blakiston (Brixham, Devon) writes with reference to Dr. Crawford Lundie's letter, November 15th (p. 929): I have had great success in cases of pernicious vomiting in pregnancy by putting patients on rectal feeding and small doses of morphine hypodermically.

LETTERS, NOTES, ETC.

Puerperal Pyrexia.

Dr. Claude Wilson (Tunbridge Wells) writes: As you invite discussion, and as there seems to be a general agreement that a temperature of 102° F.—or even 100° F. (Dr. Dudfield, British Medical Journal, November 15th, p. 900)—lasting for over twenty-four hours should be regarded as indicating a septic cause, I venture to ask the views of those with large experience on a case which occurred in my practice many years ago, which caused me much concern at the time, and which has never since been out of my mental vision when considering the question of puerperal pyrexia. The temperature rose a day or two after childbirth and lasted for three or four days, reaching a maximum of nearly 105° F. The patient, though restless and sleepless, and with a rapid pulse, was at no time desperately ill, and I could find no indication of local sepsis. The late Dr. Braxton Hicks was called in, confirmed the absence of local infection, pronounced the case one of incipient puerperal mania, and prescribed 40 grains of antipyrin with 20 grains of bromide. The patient slept for about twelve hours, woke up with a normal temperature, and made an uninterrupted recovery.

Future of Tropical Medicine and Hygiene.

Dr. Andrew Balfour, C.M.G. (London School of Hygiene and Tropical Medicine) writes: In the abstract of my address to Anderson College on the above subject, which you were good enough to publish in the British Medical Journal for November 15th, I notice that I am reported as saying that the Fijian race is in danger of extinction owing to the influence of civilization. As this statement is almost certain to be called in question, I think it well to explain that what I said has not been quite correctly transcribed. I spoke about Fiji solely from the point of view of the absence of syphilis, and my reference to the influence of civilization was confined to those islands of Melanesia, notably the Solomons, where, as noted by Dr. Rivers in his interesting *Essays on the Depopulation of Melanesia*, decay has overtaken the inhabitants.

Modified Whitehead Operation.

Sir John O'Conor, K.B.E. (Buenos Aires), writes: The recent correspondence anent the treatment of haemorrhoids by injection prompted my asking the hospital registrar to make an extract of the time occupied in the latest 100 cases operated upon by me by above method. Result: 3 in four minutes, 6 in five, 32 in six, 16 in seven, 17 in eight, 11 in nine, 6 in ten, 2 in eleven; in association with fistula, 5 in twelve, 1 in sixteen, and 1 in seventeen. To date there has not been an instance of any post-operative complication reported. This series have been operated on since my article on radical cure was published in the British Medical Journal, May 13th, 1922 (p. 759).

United Hospitals Winter Sports Club.

Dr. J. Duncan Lyle (Maidenhead) asks to be allowed once again to bring the United Hospitals Winter Sports Club (of which he is hon. secretary) to the notice of our readers. The club was founded to obtain advantageous terms at winter sports resorts and to encourage these sports amongst past and present students of all recognized medical schools in the United Kingdom. This season the Lord Dawson Cup for ski-ing will be competed for early in January at Griesalp, Bernese Oberland; but for those members who prefer the Engadine a second hotel (Hotel Waldhaus, Sils-Maria) has undertaken to assist members in many ways. Full particulars can be obtained from the managers of these two hotels.

Neutralization of Insulin before Injection.

Colonel G. F. Rowcroft (Coonoor, South India) writes with reference to the article by Dr. Stilwell in our issue of September 13th (p. 465), in which it is stated that a 6 per cent. solution of sodium bicarbonate with 3 per cent. tricresol, sterilized by filtration through a Berkefeld filter, was used. Colonel Rowcroft asks, Is this filtration necessary? Is not the tricresol sufficient, or would it not suffice to boil the sodium bicarbonate solution? The filtration process (he adds) seems to add unnecessary difficulties and expense to the administration of insulin.

Vacancies.

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 34, 35, 38, and 39 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 36 and 37.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 195.